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Rice in Asiatic Diets[1]

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WE ARE all familiar in a general way with the predominance of rice in Asiatic diets. Often we wonder how hundreds of millions of people can live out their days, rearing their families, doing their daily tasks on a monotonous ration consisting largely of rice, three times a day—when one can get it.

Essentially this a true picture, but it is a broad generalization. I have been in the Orient repeatedly and have been particularly interested in rice for the past forty years. Yet Asia is such a large area, with so diverse climatic, cultural, and economic conditions that the subject of Asiatic diets is a complex one.

To round out the picture, it may be helpful to outline some of the areas where rice is not the staple food. Wheat takes its place in great degree in China north of the Yangzte Valley and in those portions of India and Pakistan which lie northwest of a line which might be drawn between Lucknow and Bombay. The demarcation is, of course, not sharp; each grain invades in places the areas thus roughly assigned to the other. Within each area, there are also regions where some other grain is the staple. In Central China, sorghums serve as such in substantial areas as they do in parts of South India. A millet called "ragi" so serves in Central Mysore and adjacent areas. Corn is the principal cereal of Celebes and even some of the central Philippine Islands. However, in a general way, rice is the staple food of the most populous portions of India, China, Japan, the rest of Southeast Asia, and the outlying islands. About 850 million people may be grouped as rice eaters.

Of this vast segment of humanity, the larger part—about two-thirds—prefer their rice in white form. The principal exceptions are in India and Ceylon where about 180 million use rice largely in parboiled form; and in Indonesia, in the interior of Vietnam, and in Central China where the bulk of the rice is still hand-pounded in primitive fashion and, therefore, tends to retain a part of the bran. Governmental regulation seeks to prevent the complete removal of bran in mills throughout India, Indonesia, and Japan. This measure meets with varying success. Where the popular preference for white rice is strong, the governmental restrictions are often defeated, either by remilling the undermilled government rice in the home or by paying a rice miller to do so.

Hand-pounding of rice, of course, does not insure a substantial retention of bran. The bran can be completely removed in hand mortars, but the labor involved usually leads the housewife to curtail the process unless company is coming or the family is fussy about having its rice nice and white. It is, therefore, impossible to say how much protection hand-pounding affords. It is usually sufficient to prevent outbreaks of beriberi among the general population. However, the high infant mortality throughout Asia and the vague causes of death which are assigned often make one suspicious that the thiamine intakes are too low for pregnant and nursing mothers and their babies.

PARBOILING OF RICE

Parboiling as practiced in many parts of India gives a far larger margin of safety. I saw parboiling principally in the State of Orissa but was informed by competent authorities that the process there is typical also of Bihar and Bengal. As practiced in the rice mills of this area, the process usually consists of steaming the paddy (unmilled rice) for 5 min. at atmospheric pressure in steel cylinders, then transferring the hot grain to a neighboring concrete tank where it soaks in water at about 50°C. for approximately 24 hr. The still-warm paddy is then resteamed for 5 min. before going to the drying floor. Here it is raked intermittently in the sun for two or three days until it is dry enough to hull and mill.

Due to the initial and final steaming, this process is not unsanitary as it has often been reported to be when there is no treatment at sterilizing temperatures. When the paddy is merely immersed in warm water, all manner of fermentation processes may set in during soaking and continue during the drying operation, especially if a sudden rain comes up to rewet the grain before it is dry. At various parboiling plants which I visited in Thailand and Malaya

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 9, 1951.

(not now operating), there were reports of very bad odors, offensive to neighbors a mile or more away in the windward direction. Of course, the odor and flavor of the rice itself is much affected.

In Orissa, the rice mills are not well equipped from the mechanical standpoint. The grain is accordingly much broken and of varying dark color and would be quite unacceptable in many Asian markets. Through the government's rice rationing system, the product of these parboiling plants and mills goes to the various cities of India. The local population does not use it; instead they buy raw paddy in the market and parboil it in their homes in kettles of 2- to 10-gal. capacity. The hulls and a portion of the bran are then removed in mortars with hand- or foot-operated wooden pestles. The people in this area actually prefer parboiled rice.

Parboiling was formerly done in Burma, Siam, and Malaya to produce rice for export to India or for the use of local populations of Indian blood and custom. In early 1951, such commercial parboiling had not been resumed after World War II in these countries, the local Indian population having been accustomed in the meantime to unparboiled rice. So far as I could learn, parboiled rice has never been used in any of these countries by other than people of Indian race. It is a process best adapted to climates having a long dry season during which rain rarely occurs. In India, the operation of parboiling plants is substantially confined to the dry season. Most of the countries of Southeast Asia do not have such a dry season. If fuel must be used to dry the rice, the process may be quite expensive.

About 60 per cent of India's rice crop is parboiled, but there are many people in India who refuse to eat it. Brahmans and other groups demand white rice. The largest single group of this sort is the Telegu-speaking people of the northern half of Madras State, the so-called Andhra area. There are about 20 million Telegus for whom parboiling is anathema, although the peoples to the north and south accept it readily in accordance with tradition.

The mills of Andhra are much better equipped than those of Orissa and produce a much more uniform and attractive product. Under present governmental restriction, all the rice produced in these mills retains a half or third of the bran, as sold. However, it is a widespread practice for the buyer to mill it further before use. It is thus probably true that most of the rice used is nearly white. Certainly it was entirely white prior to World War II.

It is eloquent of the lack of reliable data on nutritional disease that the Telegu population, approximately equal in numbers to that of the Philippines, has reported less than 100 deaths from beriberi per year while the Philippines report about 14,000 to 20,000. The dietaries are similar, and one cannot avoid the conviction that the contrast is largely due to faulty reporting. Only the Philippines and Japan have systematically reported beriberi; elsewhere in Asia, the extent of the disease is chiefly a matter of conjecture, based on incidence in hospital populations and the like.

INTERASIA RICE TRADE

Rangoon, Bangkok, and Saigon have long been great centers of rice for export to other countries of Asia. The three countries represented by these ports are the sole rice surplus areas of Asia. All of the rice which these cities produce, either for export or for domestic consumption, is white. Their mills are large and well equipped mechanically, and great pride is taken in the appearance of their product. Almost every city of Asia has drawn upon them more or less for a substantial part of its rice supply. Since the war, the rice trade has been much disrupted by local lawlessness, interference with production, or embargoes. In consequence, Bangkok, formerly third, has surpassed both Saigon and Rangoon in export. However, the large potential productivity and milling capacity remains in each of these countries, and a restoration of political stability will quickly lead to a resumption of their former trade. Accordingly, these three centers are the principal foci for attack on the white rice problem of Asia.

Rice intended for shipment over long distances to market must be either white or parboiled, because brown or undermilled rice will spoil during transport through development of rancidity and attack by weevils. We shall say more of this in discussing the rice trade of China and Japan later. Superimposed on this sound commercial reason for white rice is the strong preference for the white product by many populations. We have already mentioned the Telegus and other groups in India. The Burmese, Thai and coastal Vietnamese, the Filipinos, Southern Chinese, and Japanese, as well as many Malays have a strong preference for the white form. When one considers that they eat it meal after meal, one appreciates that palatability is an extremely important factor.

Wherever rice is produced for strictly local consumption, distribution of the brown or undermilled product is feasible. Under these circumstances time in transit from farm to kitchen is short, and the freshly prepared grain has no chance to spoil. This condition prevails in much of Indonesia (aside from the cities) and in the interior of Vietnam. Extensive hand-pounding also persists in the interior of China and in parts of India. It has been virtually abandoned in the Philippines, Japan, Central Thailand, and Burma—indeed rather generally in all urban areas of Asia. When jobs at wages are to be had in factories or on farms, people will not continue the laborious process of hand-pounding.

MILLING IN CHINA AND JAPAN

China and Japan present some peculiarities of rice milling practice. Elsewhere, the bran is removed in

an operation which immediately succeeds the removal of the inedible hulls. Sometimes the two operations are combined. In larger mills, both jobs are done in the same building. Rice never is shipped in brown form, only as paddy or white rice. Either of these forms keeps quite well, because the hulls afford a protection for the bran layers.

In China and Japan, however, the removal of hulls is done at the farm, and the rice is shipped in brown form, often for hundreds of miles. Removal of hulls greatly reduces shipping bulk. However, the brown rice arrives in the great cities of China swarming with weevils. The milling for removal of bran, which is done in the cities, involves also smearing every grain with the crushed bodies of weevils. Brown rice cannot be sold as food in Chinese cities because of its offensive appearance. In Japan, however, the weevils are kept well under control. Partly this is due to quicker transport over shorter distances; partly it is due to systematic use of fumigants, such as chlorpicrin, during the summer months; partly it is due to the cooler climate. In winter, fumigation is unnecessary. The rice mills of Japan are numerous and generally quite small. They are electrically operated and in the cities are scattered through every neighborhood. Indeed, the mills usually serve as the government's rice rationing centers through which retail distribution is made to all households.

Both Japanese and Chinese prefer white rice, but during and since World War II, the Japanese government has fairly effectively enforced the undermilling of rice. This measure is not very popular and sometimes, at least, the rice is milled further after purchase. In China, the rice trade is quite corrupt and adulteration is widespread. Talc is invariably mixed with the brown rice as it goes into the mills. It serves both to whiten the final product and to add to its weight. It is alleged that it aids in the removal of bran, but the millers are not agreed as to whether it serves as a lubricant or as an abrasive.

FOOD SUPPLEMENTS FOR RICE

Rice is, of course, always supplemented by some other food which is commonly used as a "with rice" side dish. Often it is a bit of fish, meat, or egg. In China, vegetables are used quite often in soups or stews. In both China and Japan, soy bean curd often appears with rice. Curries and sauces are prevalent in India, Burma, Thailand, and Indonesia, often highly seasoned with peppery condiments. The basis of the meal is, however, plain boiled rice which makes up 70 to 90 per cent of the calories.

Indians, Burmese, Thai, and Northern Chinese usually cook their rice in an excess of water which is often poured off and discarded. In North China, the water is often incorporated in soups. Sometimes it is fed to babies or to pets. Extremely poor people in India will often drink the rice water between meals, especially if famine is threatening. The remainder of the people of Asia, the Malays, Indonesians, Filipinos, Vietnamese, Southern Chinese, and the Japanese invariably add only enough water to be completely absorbed by the rice as it cooks. This is most fortunate because when the practice of pouring off excess water prevails, it is almost impossible to conserve the vitamins left in the rice or put into the rice of the market place. Re-education of the masses with respect to such a practice will require generations rather than years.

RICE ENRICHMENT

This account should give you some picture of the reasons why the artificial enrichment of rice was attempted. It potentially applies to some half-billion white rice eaters who will not easily be led to adopt any other corrective measure. It will not cure all the nutritional ills of the Orient arising as they do from a variety of causes, chief of which are perhaps low intakes of thiamine, good quality protein, and calcium. However, if it corrects the untold amount of beriberi in Asia at an annual per capita cost of 35 cents per year, it will pave the way for further corrections of other dietary faults. Some of these can be achieved only by revolutionary changes in agriculture, indeed in the total economy, but one must begin somewhere. Parboiling and undermilling should continue to be encouraged, but each has its limitations based on industrial organization, climate, and popular taste.

Rice enrichment is achieved by spraying the surfaces of white rice grains with a water solution of thiamine and niacin, dusting them over with iron pyrophosphate, and drying. Each grain is then coated with an alcoholic solution of edible substances, chiefly zein, which are not soluble in cold water. This prevents the removal of the nutrients when the rice is washed before cooking. The product is a highly fortified white rice which is called a "premix." It is prepared in a central plant under chemical control. In each rice mill, provision is made for automatically mixing $\frac{1}{2}$ lb. of this premix with each 100 lb. of ordinary white rice. The mixture, called "enriched rice" in the Philippines, is sold through the ordinary channels of trade. To the layman's eye and taste, it is indistinguishable from ordinary white rice.

ENRICHMENT TRIAL IN THE PHILIPPINES

Rice enrichment has had a thorough trial in Bataan, Philippines (1) under the leadership of Dr. Juan Salcedo, Jr., now Secretary of Health for the Philippine Republic. It began with a population showing a 13 per cent incidence of detectable beriberi as revealed by the individual clinical examination of more than 12,000 people. One hundred and six (106) deaths from beriberi occurred in the Province

of Bataan while this clinical survey was in progress. A resurvey two years later, after enriched rice had been in use for nearly a year, showed an enormous decline in incidence of the disease. Deaths from beriberi have steadily dropped, and during the past year and a half not a single death from this cause has been reported, whereas there formerly were 150 to 300 deaths every year—about two-thirds of them babies. This experiment involving some 90,000 people gives a convincing demonstration of what can be done in a typical area.

The further extension of rice enrichment is our present problem. Dr. Salcedo has plans which we hope will presently be realized for enriching the rice of the entire Filipino people under governmental compulsion. It will require some five years to bring this about, for even after the sanction of law is obtained, provision must be made for large scale premix manufacture, some thousands of rice mills must be equipped to mix the premix uniformly with their product, and policing against fraud must be instituted.

Extension of rice enrichment to other countries involves still other problems, such as the shortage of dollars with which to buy vitamins. The most immediate problem, however, is to secure a reappraisal of the prevalence of beriberi in Asia generally. Only in the Philippines and Japan are any trustworthy statistics available. Elsewhere only occasional severe epidemics gain public notice. The infantile form of the disease, which is not readily diagnosed, rather generally escapes attention.

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Military Uses of Frozen Foods

"Sandwich" meals promoted anything but efficiency in long-mission flyers and air crews in 1942. However, the traditional hot meal of those times, lacking compactness and ease of preparation, was out of the question in war planes. The U. S. Navy, therefore, adopted the use of the precooked frozen meal for its patrol aircraft. Other units of the armed forces expressed interest in such foods, not only for flight feeding, but for other war conditions requiring minimum preparation, service, and storage space. These conditions included transport ships and training and hospital evacuation ships.

Greater use of frozen foods during the war was hampered by four conditions: difficulty in obtaining proper equipment for thawing and heating; difficulty in handling the precooked frozen product during shipping, storage, and holding before heating; spoilage and food poisoning due to improper handling; and poor quality of the product due to lack of industrial competition. However, since V-J Day the Food and Container Institute and the U. S. Air Force have been investigating methods of producing precooked frozen meals that can be thawed and heated in an airplane in flight. The Navy also has been making studies of this sort for submarines. It has been concerned with the feasibility of a "bulk" type of precooking and freezing—that is, freezing individual components in quantity portions. (One study will be reported in the April JOURNAL.)

On the other hand, studies of the Air Force and Food and Container Institute have been directed toward developing a satisfactory ready-to-serve individual meal on a plate. Many of the difficulties have already been overcome, and the Air Force has conducted several successful field tests. Menus for complete meals have been worked out—dinner menus containing a meat, potato, and vegetables. Knowledge has been accumulated on types of foodstuffs which lend themselves to precooking and freezing. Some of the earlier problems, such as breakdown or curdling of gravy, the proper amount of spicing, and so on have either been corrected or are well along toward solution. Such meals for the Air Force will be packed on compartmented disposable aluminum plates.

In addition, an oven has recently been designed by the Air Materiel Command, U. S. Air Force, in which precooked frozen meals as well as canned rations can be thawed and heated. These ovens are now being produced on a quantity basis.

The microbiologic hazard remains a problem to be solved. The two principal problems concern the original bacterial load of the product and the handling of the foods after they leave the plant. However, with advancements in the storage equipment as well as in equipment in which frozen food can be quickly thawed and heated, the use of these rations for special feeding operations, it is predicted, will eventually become common or even routine practice.—*Abstracted from: Bollman, M. C.: Precooked Frozen Foods. In Activities Report, Research and Development Associates, Food and Container Institute, Inc., Fourth Quarter, 1951.*

Weight Reduction on Low-Fat and Low-Carbohydrate Diets

II. Utilization of Nitrogen and Calcium[1]

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PHYSIOLOGIC application of the law of conservation of energy is the basis for the prevailing concept of energy metabolism; that is, caloric equilibrium is achieved in the body when caloric intake and expenditure are equivalent. Obesity results from a caloric imbalance in which the caloric intake has exceeded energy expenditure over a period of time. As a corollary, a caloric imbalance in which caloric intake is less than energy expenditure should be achieved to accomplish loss of body weight. Research in nutrition has demonstrated multiple instances of metabolic interrelationships, as for example, the nitrogen-sparing action of fat and carbohydrate (1, 2) and the interrelationship of dietary fat and calcium (3, 4). Alterations in the dietary pattern of an individual to bring about loss of body weight may result in a disturbance of the utilization of nutrients other than calories.

Brown and co-workers (5) reported that the retentions of nitrogen, calcium, and phosphorus by obese college women were poorer during weight reduction on a low-calorie, low-fat diet than during a pre-reduction period. Leverton *et al.* (6, 7) found that the retentions of calcium and phosphorus by college women on reducing diets were lower than retentions reported by McKay *et al.* (8) for women on self-selected diets.

Weight losses for overweight college women on a restricted-calorie, low-fat diet and on a restricted-calorie, low-carbohydrate diet have been reported from this laboratory (9). The utilization of nitrogen and calcium by these women was studied during a period of unrestricted food intake, and during and after weight reduction.

EXPERIMENTAL PROCEDURE

In the first series of the experiment, four overweight college women were given a weight-reducing diet which supplied an average of 1200 calories, 10.5 gm. nitrogen, and 22 gm. fat per day. In the second series, ten overweight college women were given a diet which supplied an average of 1500 calories, 16.2 gm. nitrogen, and 90 gm. fat per day. The customary food intake of all subjects was studied for a two-week period preceding weight reduction. The desirable body weight for each subject was determined by anthropometric measurements and by reference to Baldwin-Wood age-height-weight tables. All foods eaten by the subjects were weighed. Aliquots of one-fifth of each serving of food were sampled at every meal, and laboratory analyses were made on seven-day food composites. Four subjects attained the desired weight for their respective body builds during the experiment and were given additional foods in an attempt to determine the caloric intake which would maintain them at their desired weights. Details of the experimental plan, the composition of the diets, a description of the subjects, and changes in body weight have been presented by Cederquist (9).

Fecal and urinary collections were made during the second week of the preliminary period of self-selected diet and every third week during weight reduction and weight maintenance. Food and excreta were analyzed for nitrogen in both Series I and II by the Kjeldahl procedure (10). Calcium analyses were made on food and excreta collected during balance periods in Series II by a modification of the method of McCrudden (11). The caloric content of

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food and feces was determined by combustion in a bomb calorimeter. The physiologic fuel value of the diet was determined by subtraction of the caloric equivalent of the daily urinary nitrogen excretion and the fecal calories from the heat of combustion of the food.

NITROGEN METABOLISM

Nitrogen retentions by the overweight women of Series I and II during the period of self-selected diet and during weight reduction are given in Table 1. The caloric intake for the four subjects in Series I averaged 2278 calories per day for self-selected diets. This was 432 calories per day higher than the caloric intakes for the subjects in Series II on self-selected diets, and the average nitrogen intake was 1.3 gm. per day higher for the subjects in the first series than for those in the second. The protein intake during the period of self-selected diets varied from 76 to 84 gm. per day. This intake was adequate to permit nitrogen retention for all subjects. The relatively high nitrogen retention for the subjects in Series I suggested that this intake of protein was greater than that which the subjects had received immediately preceding the study, although it represented the intake preference of the subjects when they were allowed to select food without restriction. The data on nitrogen retention for the subjects on self-selected diets indicated that subjects of both series were in good nutritional state with respect to nitrogen metabolism at the beginning of the experiment. There was no indication that the extent of overweight of these subjects affected the nitrogen metabolism.

The protein intake during weight reduction on the restricted-calorie, low-fat diet averaged 66 gm. per day. This was 18 gm. less than these subjects had consumed on their customary self-selected diets. Three subjects were in nitrogen equilibrium or retaining nitrogen during thirteen weeks of weight reduction. One subject had steadily decreasing losses of body nitrogen which varied from 1.9 gm. after two weeks of weight reduction to 0.5 gm. after ten weeks. After the thirteenth week, however, this subject had a retention of 1.0 gm. nitrogen per day.

The weight-reducing diet for Series II was a diet in which the calories were supplied chiefly by protein and fat and which was low in carbohydrate. The protein content of this diet averaged 101 gm. protein daily. This was approximately 25 gm. higher than the protein intake of these subjects on the self-selected diet. This intake of protein was adequate to provide for nitrogen retention throughout the first thirteen weeks of weight reduction. Three of the subjects were in negative nitrogen balance during the last balance period. However, this period immediately preceded final examination week, when there was an apparent increase of anxiety and tension among the subjects, and the lowered nitrogen retentions undoubtedly reflected this emotional strain. A similar influence was observed immediately before final examination for subjects of Series I since the retentions of nitrogen for two of the three subjects were lower than during earlier periods.

The retentions of nitrogen by the young women of this study were satisfactory both on the low-fat and low-carbohydrate diets. Since the quantity of protein included in both diets was generous, it was not possible to relate the source of non-protein calories in the diet to its effect on nitrogen metabolism. The quantitative requirement for nitrogen of young women during weight reduction may depend upon the caloric intake and the composition of the diet. The ratio of fat and carbohydrate in the low-fat diet reported for Series I was similar to that of the weight-reducing diets reported by Brown, Herman, and Ohlson (5) and Leverton *et al.* (6, 7). Four of eight subjects studied by Brown *et al.* (5) were in positive nitrogen balance on a low-calorie (1000 to 1276 calories) diet which supplied 10.87 gm. nitrogen daily.

TABLE 1

Nitrogen metabolism of overweight college women on self-selected and reducing diets

PERIOD OF STUDY	SERIES I—LOW-FAT DIET				SERIES II—LOW-CARBOHYDRATE DIET			
	Number of subjects	Calories per 24 hr.	Nitrogen		Number of subjects	Calories per 24 hr.	Nitrogen	
			Mean intake	Mean retention			Mean intake	Mean retention
			gm./24 hr.	*gm./24 hr.*			*gm./24 hr.*	*gm./24 hr.*
Self-selected diet	4	2278	13.5 ± 1.2*	3.4 ± 0.04	10	1846	12.2 ± 0.3	0.7 ± 0.2
Weight-reducing diet								
After 2 weeks	4	1262	11.1	0.21 ± 0.63	8	1622	16.0	0.67 ± 0.20
After 3 weeks					3	1529	16.1	0.32 ± 0.24
After 5 weeks	4	1173	11.2	0.40 ± 0.60	8	1484	15.9	0.41 ± 0.38
After 10 weeks	4	1119	10.1	0.32 ± 0.31	6	1514	16.7	1.29 ± 0.56
After 12 weeks					2	1621	15.8	0.52 ± 0.14
After 13 weeks	4	1239	11.6	2.84 ± 1.00	6	1497	16.9	0.87 ± 0.47
After 16 weeks	3	1184	8.7	0.92 ± 1.08	4	1496	16.2	−0.74 ± 0.51

* Standard error of the mean.

The average retention was 0.27 gm. nitrogen per day. Leverton and Gram (7) reported that nine of twelve subjects were retaining nitrogen at an intake of 10 gm. nitrogen and 1200 calories daily, the mean retention being 0.36 gm. for the twelve subjects. In this study, three of four subjects showed satisfactory nitrogen retentions on a mean intake of 10.5 gm. nitrogen and 1194 calories per day on a low-fat diet. The intake of non-protein calories on these diets apparently was adequate to protect nitrogen metabolism when the nitrogen intake was 10 gm. or more per day; however, the number of negative retentions reported in these studies suggest that this ratio of protein to calories might be a critical ratio for maintenance of nitrogen equilibrium on reducing diets. The generous intake of 16.2 gm. nitrogen promoted nitrogen retention for all of the subjects on the high-protein, low-carbohydrate diet which supplied 1500 calories per day, except in the final period.

CALCIUM METABOLISM

The intakes and retentions of calcium were not determined for the first series of subjects. However, the calcium metabolism of the subjects of Series II was studied, and Table 2 presents data for these subjects on self-selected diets and during successive weeks of weight reduction. The subjects, when permitted to eat without restriction, selected diets which ranged from 0.77 to 1.04 gm. calcium per day with an average intake of 1.01 gm.

The average calcium intake was lowered from 1.01 gm. per day for the subjects on the self-selected diet to an average intake of 0.86 gm. calcium daily during weight reduction. These subjects were essentially in calcium equilibrium during the first ten weeks of weight reduction. Three of the six subjects remained in calcium equilibrium during the entire period of weight reduction, while the other three had increased negative retentions during the last six weeks of weight reduction. This may have reflected the effect of the strain and tension of the last weeks of the school year or may have represented failure to maintain calcium equilibrium during weight reduction similar to that which was reported by Brown and co-workers in 1946 (5), Leverton *et al.* in 1949 (6), and again in 1951 (7).

TABLE 2

Calcium metabolism of overweight college women on self-selected and reducing diets

PERIOD OF STUDY	NUMBER OF SUBJECTS	CALCIUM	
		Mean intake	Mean retention
		gm./day	*gm./day*
Self-selected diet	10	1.01 ± 0.03*	−0.03 ± 0.06
Weight-reducing diet			
After 2 weeks	7	0.92	0.03 ± 0.04
After 3 weeks	3	0.88	−0.03 ± 0.08
After 5 weeks	7	0.79	−0.01 ± 0.05
After 10 weeks	6	0.77	−0.01 ± 0.06
After 12 weeks	2	0.95	0.06 ± 0.11
After 13 weeks	6	0.79	−0.13 ± 0.06
After 16 weeks	4	0.90	−0.17 ± 0.09

* Standard error of the mean.

The relation of calcium retention to calcium intake for the subjects during weight reduction was compared with the relation of calcium intake and retention for six healthy young college women of average weight for their body build who were studied in this laboratory on controlled diets (unpublished data), and with the relation of calcium retention and intake which was reported by McKay *et al.* in 1942 for 124 college women on self-selected diets (8). The comparisons are shown graphically in Figure 1.

According to predicting equations determined from the various data, calcium equilibrium would be expected at an intake of 0.93 gm. calcium per day for the overweight women, at an intake of 0.63 gm. calcium per day for college women on a controlled diet, and at 0.82 gm. calcium per day for the college women studied by McKay and co-workers (8) on self-selected diets. Predicted retentions for the calcium intakes of the individual subjects on the weight-reducing diet were calculated from the predicting equations for the women of average weight and for the subjects studied by McKay *et al.* (8). Application of the "t" test (12) indicated that the deviations of the individual calcium retentions of the subjects on the weight-reducing regimen from the regression line predicted from McKay's study were not significant; however, deviations from the regression line predicted from the data for college women of average

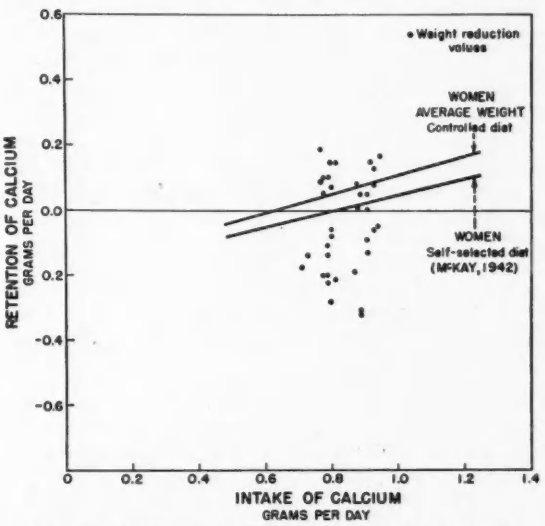

FIG. 1. *Distribution of calcium retentions of overweight women on a low-carbohydrate, restricted-calorie diet about the regression lines as predicted for women of average weight and for college women on self-selected diets (McKay et al. [8]).*

weight on controlled diets were highly significant. These observations are difficult to interpret.

It is possible, as Leverton and co-workers (6, 7) have suggested, that weight reduction interferes with calcium storage. It is also possible that the high proportion of fat to calories in the weight reduction diet may have affected calcium utilization. However, Mallon *et al.* (13) reported that there was no evidence that the fat content of the diet, in amounts of 5.8 to 105.6 gm. per day, had any influence on the calcium retentions of young women. Since the presence of some fat in the diet has been reported to be beneficial to calcium storage, and since the absolute amount of fat in the diet was not high, the authors are inclined to consider that weight reduction imposed metabolic stress which resulted in lowered calcium retentions by these subjects.

WEIGHT MAINTENANCE

Continuous research on an individual during periods of self-selected diet, weight reduction to desirable weight, and weight maintenance is difficult since the length of time becomes long. This is particularly true with college women for whom the calendar year is interrupted by a summer vacation. Of the ten subjects who were studied on the low-carbohydrate diet, four achieved desired weight during the period of study. In Table 3 are presented data on the utilization of nitrogen and calcium by these women on diets planned to maintain desired body weight. The purpose in selecting the dietary supplements was to vary distribution of food in the diet pattern so that it approached the typical food pattern of this region. The protein intake of the subjects was high since the basic diet was the same diet given to the subjects on weight reduction. All of the subjects were in nitrogen equilibrium or retaining nitrogen during weight maintenance. The nitrogen retentions of these subjects were higher than the values reported by Brown and co-workers (5) for five subjects on a post-reduction controlled diet. They found the average nitrogen retention of their subjects to be 0.04 gm. per day on an intake of 15.93 gm.; two were losing approximately 1 gm. nitrogen per day.

TABLE 3

Nitrogen and calcium metabolism of college women on weight maintenance (following weight reduction)

WEEKS ON WEIGHT MAINTENANCE	NUMBER OF SUBJECTS	CALORIES PER 24 HR.	NITROGEN		CALCIUM	
			Mean intake	Mean retention	Mean intake	Mean retention
			gm./24 hr.	*gm./24 hr.*	*gm./24 hr.*	*gm./24 hr.*
2 weeks	4	1544	16.6	0.10 ± 0.34*	0.94	−0.05 ± 0.05
7 weeks	2	1732	17.7	0.22 ± 0.19	0.85	−0.20 ± 0.12
10 weeks	2	1946	18.8	1.57 ± 0.56	1.02	−0.18 ± 0.24
13 weeks	2	1928	17.9	0.80 ± 0.04	1.16	−0.06 ± 0.06

* Standard error of the mean.

The average calcium retention of the subjects varied from −0.05 to −0.20 gm. per day on the weight maintenance diets. The delay in adjustment to increased intake of calcium in the post-reducing period apparently reflected possible strain imposed on calcium metabolism during weight reduction.

Cederquist *et al.* (9) have reported that the weight losses of the young women on the low-carbohydrate diet used in Series II were more satisfactory over a period of time than those of the subjects on the low-fat diet in Series I. The data presented in this paper indicate that the nitrogen metabolism of these subjects was on a satisfactory plane and that calcium metabolism was maintained near an equilibrium of intake and retention.

SUMMARY

The intakes and retentions of nitrogen were determined for four overweight college women given a low-fat diet which supplied an average of 1200 calories and 10.5 gm. nitrogen per day (Series I) and for ten overweight college women given a low-carbohydrate diet which supplied an average of 1500 calories and 16.2 gm. nitrogen per day (Series II). The calcium intakes and retentions also were determined for subjects in Series II.

The mean nitrogen retentions for subjects on the low-fat diet ranged from 0.21 to 2.84 gm. per day; the mean nitrogen retentions for subjects on the low-carbohydrate diet ranged from −0.74 to 1.29 gm. per day.

Average calcium retentions for subjects in Series II varied from −0.17 to 0.06 gm. calcium per day at an average intake of 0.86 gm. per day. The retention of calcium by the subjects on weight-reducing diets was significantly lower than that of women of average weight on controlled diets, but did not differ significantly from values reported for college women on self-selected diets.

The nitrogen retentions were positive for two subjects who were maintained at their desired body weight for thirteen weeks following weight reduction. Mean calcium retentions varied from −0.05 to −0.20 gm. per day on an average daily intake of 1.0 gm.

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Benjamin Thompson (Count Rumford)—March 26, 1753–August 21, 1814

Benjamin Thompson was the author of "On the Construction of Kitchen Fireplaces and Kitchen Utensils Together with Remarks and Observations Relating to the Various Processes of Cooking." When we realize that he was a British cavalry colonel, Under Secretary of State, and knighted in England; that he was Chief of Police and Chamberlain to the Elector Palatine, Count Rumford of the Holy Roman Empire, Privy Councilor, and Minister of War to the Duke of Bavaria; that he was one of the outstanding scientists and philanthropists of his day; that he married the widow of Lavoisier; we know that this was no ordinary man.

Our main interests here, however, are his contributions to science and feeding of people. He was born on a farm in Woburn, New Hampshire, March 26, 1753. In his youth he was a clerk in a dry goods store in Boston; taught school at Rumford (now Concord), New Hampshire; studied medicine; attended lectures in philosophy at Harvard, and late in life left his estate to found a professorship there; married a rich widow when he was nineteen; and because of royalist associations went to England in 1776 and entered the colonial office.

Good looks, personal charm, ability as a conversationalist, keen interest in science, military skill, and exceptional ability as an administrator gained for Thompson rapid advancement and honors in England and later Bavaria.

In science his major contribution was a paper on heat generated by friction. Up to that time, heat had been considered a fluid substance held in the pores of bodies and squeezed out when they were hammered or rubbed. Thompson, through observations while boring cannon, realized that heat was a form of energy and devised and carried out experiments to prove this. He found the quantitative relation between mechanical work and heat and perceived its relation to animal life. His work was the basis for modern caloric studies.

In the eighteenth century, potatoes were an unfamiliar and unacceptable article of food. Thompson, through his efforts to improve conditions and morale of the Bavarian army, also helped to spread the use of potatoes and other seed and vegetable crops. Soldiers were given plots of land and seeds and tools. The produce could be used or sold by the soldiers and, of course, were frequently carried home when the men were on furlough.

It may also be justifiably claimed for Benjamin Thompson that he was the first to organize institutional feeding on a scientific basis. When he first arrived in Munich, he found many beggars. He established what were called "houses of industry," where all beggars were brought, given food and work, and paid for their work. Children, too, were trained to work, and the soup kitchens which were established in Munich for vagrant children are generally considered to be the forerunners of today's school lunch feeding.

Thompson's love for science and interest in improving conditions led him to many studies of cheap and wholesome diet and experiments in cooking, lighting, and heating; he substituted the range for the open fireplace.

He founded the Royal Institution of Great Britain and gave to the Royal Society of London and also to the American Academy of Arts and Sciences a sum of $5000, the interest from which was to be used to found the Rumford Medal given every two years to the person making the most important discovery or useful improvement in heat or light.

Pictures of Benjamin Thompson show him to be a handsome man of strong and aristocratic bearing. He is described, however, as being authoritative and dictatorial.

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A Comparison of Dietary Study Methods

II. Dietary History vs. Seven-Day Record vs. 24-Hr. Recall[1]

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With the technical assistance of Constance Brine[4] and Vivian Smudski[2]

RESULTS of a comparison of the research type of dietary history and the seven-day dietary record as methods of estimating the dietary intake of individuals and of groups have been presented in a previous publication (1). Certain of these investigators became interested in the relationship which might exist between the research type of dietary history, a 24-hr. recall of intake, and the seven-day dietary record. The research type of history was designed to give a picture of dietary intake over a somewhat longer time interval than either of the other two methods, but the investigators still wished to learn what relationship existed between it and these other methods. In certain dietary studies where time and subject cooperation are at a premium, recall by the subject of his food intake during the previous 24 hr. has often been the method of expediency. The question arose as to the relationship existing between the dietary estimation obtained by this quick method and those obtained by the longer and much more time-consuming methods of the dietary history and the seven-day dietary record. In estimating the nutrient intake of an individual, how do results of the three methods compare? In estimating the mean nutrient intake of a group, how do the three methods compare? The present investigation was made to find answers to these questions.

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METHOD

Subjects

Three of the stations cooperating in the nutritional status project NE-4 contributed data to this portion of the investigation: Massachusetts, New York, and Rhode Island. In Table 1 are presented the number, age, and type of subjects studied by each station. Data obtained on the relationship of the three dietary study methods using these three different population groups should be more meaningful than when results are based on only one type of subject.

Collection of Data

The general set-up of the project and details of the dietary methods have been described previously (2) as was the comparison between the dietary history and seven-day dietary record (1).

In brief, the dietary history was of the research type, modified after Burke (3), and took approximately 1 hr. of interview time per subject. The seven-day record was of the conventional type including "everything taken into the mouth and swallowed" for a one-week period. The 24-hr. recall consisted of a very brief interview in which the subject was asked to recall all intake over the past 24 hr., starting with the last meal or other food intake. The order of procedure was as follows: first, the recall of food intake for the past 24 hr. was obtained; then the dietary history was solicited by a trained nutritionist. Later, after individual and group instruction, the same subjects kept seven-day dietary records.

Calculation of Data

The recall, dietary history, and dietary record were calculated as to nutrients (1) and the resulting figures used in making comparisons between the methods of collection of data.

TABLE 1

Subjects studied by the three stations

STATION	OCCUPATION	AGE					
		Male			Female		
		No.	Average	Range	No.	Average	Range
			yr.	*yr.*		*yr.*	*yr.*
Massachusetts	Pregnant women	—	—	—	28	—	16–34
New York	Seventh and eighth grade pupils	24	14	11–18	27	13	12–16
Rhode Island	High school and college students	10	18	15–26	77	19	16–24

Statistical Treatment of Data

Details of statistical treatment, justification for and application of procedures used are reported elsewhere (4). For the present purpose only the type of statistical device used for each comparison will be indicated.

The question of whether, for the individual, the estimation of intake by the 24-hr. recall method tended to give the same results as that obtained by the dietary history and whether the 24-hr. recall tended to give the same estimate as the seven-day record was investigated by means of linear regression (5). Regression coefficients, or the slopes of the regression lines, were compared to determine whether the relationship between the 24-hr. recall and the dietary history and that between the recall and the seven-day dietary record were the same from state to state, that is, for the three different population groups studied. If the same relationship existed, it would mean that the methods were relatively consistent regardless of whether the methods were applied to pregnant women, college students, or grade school pupils.

The next topic with which the authors were concerned was the relation between the three methods in estimating the mean intake of a *group* of individuals. Do the 24-hr. recall and the dietary history give essentially the same estimate of the mean intake of a group? What is the difference between the mean intake of the group as estimated by 24-hr. recall and by seven-day record? These two questions were investigated, first, by computing for each nutrient the percentage difference between the means obtained by using the two different methods being compared; second, by the paired comparison "t" test, to test whether for a group the estimation of mean intake was the same from method to method. The final answer to the comparisons depended upon the joint use of the two procedures.

RESULTS

Estimate for Individual

24-Hr. Recall vs. History. For the individual, did the 24-hr. recall give essentially the same estimate of nutrient intake as the dietary history? Or, statistically, we tested the hypothesis that the 24-hr. recall is an unbiased estimate of the dietary history. The hypothesis was rejected in all cases. The 24-hr. recall did not give essentially the same estimate of intake for an individual as the dietary history.

Statistical comparison of the regression coefficients showed that the relationship between the 24-hr. recall and the dietary history was not the same for any of the three population groups studied for all nutrients except calcium and phosphorus.

24-Hr. Recall vs. Seven-Day Record. The same statistical procedures were applied to the 24-hr. recall vs. seven-day record. The hypothesis stating "24-hr. recall is an unbiased estimate of seven-day record" was rejected without exception for all ten nutrients. This led to the conclusion that the nutrient intakes expected from a seven-day record for an individual are not likely to be obtained when using a 24-hr. recall. In other words, if one is interested in knowing the nutrient intake of an individual, whether of grade school, high school, or college age or a pregnant woman, the shorter 24-hr. recall method cannot be substituted for the seven-day record method with any assurance of obtaining the same picture of nutrient intake.

The question as to whether the relationship is the same between the 24-hr. recall and the seven-day record from station to station, that is, for grade, high school, or college students or pregnant women, was investigated by comparing regression coefficients. In the case of only one nutrient, niacin, was there any significantly different relationship between the three population groups. This is in contrast to the similar comparison between 24-hr. recall and history. Apparently the relationship between 24-hr. recall and seven-day record for the children and women studied here was more stable than that between dietary history and 24-hr. recall. Furthermore, it seems that the variation encountered in the dietary history, due either to the type of subject studied or to the interviewers, disappeared largely in the 24-hr. recall.

Estimate for Group

24-Hr. Recall vs. History. The previous findings have been concerned with the use of these methods

TABLE 2

Percentage differences between history and 24-hr. recall

NUTRIENT	DIFFERENCE		
	Massachusetts	New York	Rhode Island
	%	%	%
Calories	21.1	23.3	−9.7
Protein	23.8	20.1	−7.2
Calcium	20.6	21.5	0.1
Phosphorus	23.8	20.9	−3.7
Iron	32.2	17.3	−10.9
Vitamin A	47.7	42.5	−6.0
Thiamine	5.5	11.9	−13.7
Riboflavin	26.9	23.8	−4.5
Niacin	25.6	23.7	−8.9
Ascorbic acid	0.7	19.2	−3.7

TABLE 3

Percentage differences between 24-hr. recall and seven-day record

NUTRIENT	DIFFERENCE		
	Massachusetts	New York	Rhode Island
	%	%	%
Calories	2.4	6.5	0.9
Protein	1.1	1.9	4.3
Calcium	13.1	2.5	11.9
Phosphorus	3.1	1.3	8.2
Iron	7.7	1.7	3.4
Vitamin A	1.8	9.5	37.8
Thiamine	6.5	5.0	4.5
Riboflavin	1.2	1.3	14.6
Niacin	6.0	4.9	5.4
Ascorbic acid	15.8	10.0	0.7

in studying the dietary intake of individuals. A quite different problem is that of describing the dietary intake of a group of individuals. To describe a group, was the estimate of mean intake obtained by dietary histories essentially the same as that obtained by 24-hr. recalls from the same subjects? The dietary history gave decidedly higher estimates of intake than the 24-hr. recall for all the nutrients in New York (grade school children) and for eight of ten nutrients in Massachusetts (pregnant women) (Table 2). For college students at Rhode Island (mainly home economics students), the reverse was true for four nutrients, though in the case of the other six nutrients the differences between history and 24-hr. recall were negligible and not significant. Obviously, then, the magnitude of the differences between the two methods when applied to these population groups was not the same. Study by analysis of variance substantiated this conclusion for all nutrients except protein and ascorbic acid.

24-Hr. Recall vs. Seven-Day Record. That 24-hr. recall and seven-day record can be used interchangeably for the population groups studied seems to be evident. For New York (grade children) and Massachusetts (pregnant women) for all nutrients, and for Rhode Island (college students) for six nutrients, there were no detectable differences between estimates for the groups obtained by the 24-hr. recall and by the seven-day record, despite the fact that in a few instances the differences represented as much as 10 per cent of the seven-day mean (Table 3). It seems possible, then, that when an estimate of the mean intake of a group of roughly fifty persons or more is desired and when some errors of 10 per cent can be tolerated, the shorter, more expedient 24-hr. recall can be used as a substitute for the more time-consuming seven-day record. Such a substitution would mean a tremendous saving in time, both in collection of data and in its calculation and analysis. Also, since considerably less participant's time and cooperation is involved, a more representative population sample would probably be possible.

However, warning must be given that investigators should not feel justified in using this conclusion unless they have, by small pilot study, verified the results for the population and nutrients that were under consideration in their investigations. It also should be remembered that the interchangeable use of the 24-hr. recall and the seven-day record applies only when one wishes to describe the mean intake of a group as a whole. As noted earlier, the two methods cannot be used interchangeably in describing the intake of individual subjects.

It is of interest, further, that the size of the difference between the two methods for a group, 24-hr. recall and seven-day record, was approximately the same for all three population groups studied. Throughout the groups reported here, the estimate of dietary intake obtained from the 24-hr. recall seemed to be in closer agreement with the estimate obtained from the seven-day record than with that obtained by dietary history. Values obtained by dietary history for most population groups studied were definitely higher than those obtained by any of the other estimates used.

SUMMARY

A comparison was made of the use of the dietary history vs. 24-hr. recall and the seven-day record vs. 24-hr. recall as methods of estimating the nutrient intake of an individual and of a group. Data for these comparisons were obtained from three different population groups: grade school children (New York), high school and college students (Rhode Island), and pregnant women (Massachusetts).

For an individual, in any of the three population groups studied, the 24-hr. recall did not give the same estimate of intake as the dietary history.

For an individual, in any of the three population groups studied, the 24-hr. recall did not give the same estimate of dietary intake as the seven-day record. To describe the intake of individuals, the two methods could not be used interchangeably.

For the mean of a group, the dietary history gave distinctively higher values for grade school children and for pregnant women than did the estimates obtained by 24-hr. recall. The history and 24-hr. recall gave results which were in better agreement for the college group studied.

For the mean of a group, the seven-day record and the 24-hr. recall tended to give approximately the same estimates for the dietary intake for most nutrients. This was true for all three population groups to which the two methods were applied: grade school, high school and college students, and pregnant women. Under certain circumstances the 24-hr. recall can be substituted for the seven-day record in estimating group intakes.

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Pemmican for Military Emergencies

"It is about pemmican," says Dr. Vilhjalmur Stefansson, Arctic explorer, "as the Scots are said to say about whiskey—there is no bad pemmican, but some are better than others."

Dr. Stefansson, writing in the *Activities Report, Research and Development Associates, Food and Container Institute, Inc., Fourth Quarter, 1951*, notes that pemmican, often considered to be a regular food of the Indians, was never actually used by them except as an emergency military ration when they were on war parties. When the fur trade took up pemmican as a commercial ration, they used it mostly during hot weather, for nearly all their long journeys were in summer, chiefly by canoe and portage. Its first important cold weather use was about 1847–48.

Fundamentally, Stefansson says, pemmican consists of only two things: lean meat from which moisture has been removed by wind-, sun-, or smoke-drying, or (in modern times) by some other process, and rendered fat. The primitive way of making pemmican was to dry meat with or without smoke (usually without) until 6 lb. were reduced to about 1 lb. The slabs of dried meat were then placed on a wooden block and hammered with stone or wooden mallets until the meat was shredded so as to remind you somewhat of a shredded wheat biscuit.

Pemmican is always encased in some kind of a membrane—an intestine like our sausages, a bladder, an animal stomach, or a bag of rawhide. The bag is filled with the shredded lean—not tightly but fluffily—and into the mouth is then poured tallow, heated almost as hot as lard for frying doughnuts. This super-heated fat penetrates among all the shreds and particles of lean, bringing each to a temperature near or above the boiling point of water, thus effectively pasteurizing the whole product, including the inside of the bag.

The reasons for pemmican's keeping qualities—estimates range from five to forty years—are several. The lean meat does not spoil because the water has been removed by drying. The fat does not spoil because it is of a type that does not easily get rancid. The inside of the lump does not spoil because the fat of the outside layer is an airtight seal.

In primitive times pemmican was made with dried berries on occasion; white men have tried raisins and sugar. Of recent years there has been a tendency to "improve" pemmican by adding such things as raisins, chocolate, powdered milk, and even cereals. Some pemmicans have been made with as many as ten adulterants. Usually men who have no plain pemmican with them will like the "fruit-cake" pemmican well enough and sometimes praise it, but on expeditions which have carried both, the preference has been for the simpler kind.

Admiral Peary used more pemmican than perhaps any other explorer. The ration for his men was a pound of pemmican each day, a pound of hard bread, and unlimited tea with no variation except in manner of eating. On some occasions the men would munch as on a chocolate bar, eating the pemmican with their tea. In other cases, they would make a stew of pemmican and biscuits.

The best pemmican has an 80–20 or 85–15 fat-lean ratio. It is, in effect, meat, for it is made from the two chief components of meat—lean and fat.

Stefansson recommends that in situations where appetites may be satisfied without it, pemmican should not be used, because it may be needed for another use later and is very expensive, both in actual price and manhours required to produce it.

Problems in Sustaining the Nutritional Care of Patients[1]

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BEHAVIOR of the human being is extremely complex. In naïveté we sometimes say that if an individual is hungry, he can eat; if he is ill, he will want to get well. These simple statements rarely hold true. Efforts to understand not only how but why a human being behaves as he does have led to extensive studies of human motivation and of the concept of maturity in relation both to oneself and to one's fellow beings. A study specific to the complexity of the problem of helping people to eat not only for the physical and emotional health of the individual but for the well-being of a world is furnished by the well known Report of the Committee on Food Habits of the National Research Council, 1941–1943 (1). In this report a multi-disciplined approach sheds light upon the problem of changing food habits. Many other studies are recorded in the literature from all the fields of research in human behavior. Brener has dealt effectively with the role of food in the life of the individual and the principles basic to the establishment of a relationship in which individuals can learn to help themselves in freeing or repairing the psychologic processes essential to their life and growth (2). This paper is concerned with some aspects of human behavior that may be meaningful in developing and sustaining the patient-nutritionist relationship sufficiently to achieve the therapeutic goal.

DEVELOPMENT OF FOOD PATTERNS

It is well known that food is invested with meanings far beyond its caloric significance and that ingestion or rejection of food may have little bearing on its nutritive value. Food is associated with social and economic as well as physical and emotional security or insecurity (3). Furthermore, the food-taking and receiving, food freedom and limitation are readily associated with past and present relationships to people in which the basic human emotions are experienced as pleasant or unpleasant. Food serves as the first important channel of communication between parent and child. This occurs long before other channels, such as gesture, motor activity, and speech, are meaningfully developed. Thus, feeling associatively experienced with food is ontogenetically older than feeling experienced in connection with speech. The child recognizes before he has words to describe them, feelings that are aroused by the person who is in control of his food. Thereafter, conscious and unconscious attitudes toward the early food giver may be carried over to a later specialized food giver (nutritionist) when the person becomes a patient. Furthermore, the sick individual often expresses these feelings and attitudes more easily in his food behavior that he does in speech. It is easier to show discouragement through anorexia than it is to explain that one is feeling inadequate and depressed in the presence of a frightening disease or a disheartening experience.

Food patterns have specificity in relation to growth. Just as one can trace patterns in the area of motor skill, intellectual processes, and work trends toward mature productivity, one also can trace trends in food patterns specific to various periods of life. Some foods are appropriate to infancy, others are associated with the turbulence of adolescence, while others are marks of adulthood. Although these trends are influenced greatly by patterns characteristic of the culture, they are also influenced by appropriateness to a person's nutritional and social needs.

Adaptation to life can be measured to some extent by the type, content, variety, and handling of food. For example, a highly intelligent college graduate was raised by a controlling mother who discouraged the patient's social and emotional growth. This patient became constricted and inhibited, allowing her needs to be gratified only in the area of eating. In the solitude of her room, and apart from the family, the patient felt free to gratify her need by eating large quantities of food prepared by the mother. Severe obesity resulted. Yet the nature of her food habits was symbolic of the total impoverish-

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 12, 1951.

ment and restriction of all of her life patterns. From the day that she entered high school until the day she graduated, she ate the same food each noon—a peanut butter sandwich. This she ate alone, thus continuing the pattern of consumption of food in lonely silence without comradeship and without interest. Here, as in many instances, attitudes about the self and the society are expressed both in private and public consumption of food.

PROBLEMS IN ADMINISTERING DIET THERAPY

It can be predicted, therefore, that for an individual in whose illness the diet plays an integral part, the concealed meanings of food will be equally as significant as the caloric need. The total adjustment of the individual will be revealed in the manner in which he adapts himself to the dietary change essential to the restoration of his health.

It is neither possible nor indicated for the dietitian to know the complex meanings of food to each of her patients, the varied experiences with food that each has had, the nature and intensity of the trauma of their lives in relation both to significant persons and to pertinent events of this world's history. It is essential, however, that she appreciate these relationships and recognize that a sick person is seldom able to learn to use a diet readily even though he wants to get well.

PSYCHOLOGIC RESPONSES TO ILLNESS

What are the psychologic responses to illness? First, one reacts to any situation of stress or conflict with anxiety. This anxiety may be felt directly as anxiousness and apprehension, or it may be expressed in any of a large number of concealed forms, such as a vague restlessness, a sense of fatigue or depression, a series of physical ailments apart from the presenting illness, increasing or decreased intellectual or social activity, or disturbance in the eating pattern itself.

Any illness of more than minor proportion is always a threat to the individual. It often shakes his economic and social security and endangers the emotional and financial stability of people dependent upon him, but more seriously, it threatens his estimate of himself. Much anxiety which is experienced referable to disease is related to the fact that illness is often unexpected, that it has not been "planned for" in the individual's thinking about himself, that it is unpredictable in what it may do to him, and furthermore that he is not in control of something which is happening to him. While it is true that many people in adjusting to illness obtain enjoyment from the regression and attention it permits them (and which at times they need), it should be remembered that these are secondary gains. They are often poor substitutes for the loss of potential, and they seldom compensate for the anxiety and suffering inherent in the illness.

In the presence of such overt or concealed anxiety, it is seldom that the patient can learn. The normal response to anxiety is to try to do something about it, to discharge it in some way in order to lose the sense of discomfort, the feeling of disturbance in one's functioning equilibrium, the fear of personal disorder and panic. It is only in the well-disciplined person that the first response to the anxiety created by illness is one of wishing to learn exactly how to manage it. Even he, in his anxiety, may respond with excessive concern about the minutiae of the diet.

Much more frequent are the responses which the nutritionist meets on her first contact with other patients: disbelief in the need for a diet; unwillingness to change the pattern of living because the untried is unknown and therefore adds to the anxiety; anger at any of a large number of persons felt to be responsible for the patient's discomfort ranging from the doctor who has just made the diagnosis to the mother, who years earlier nagged the patient about his food; a sense of loss of status and prestige; feelings of personal failure or inadequacy about oneself or one's family, feelings of shame, a fear of loss of social acceptance, a fear that one will have to depart from accepted cultural patterns; a fear that one will be asked to eat foods about which one has an associated ignorant or superstitious prejudice; a sense of guilt and of feeling that the illness is just or unjust punishment for the past misdeeds or thoughts; feelings that some privacy of the self is being invaded or some weakness exposed; and almost universally a feeling that one is being deprived. This feeling of deprivation, concomitant often with feelings of depression, deep resentment, or grief and loss may stem from the individual's earliest and deepest experience.

The fear of deprivation is associated with two emotional phenomena pertinent to man's well-being: first, the threat to life that comes when one is deprived and the basic terror of being alone and abandoned in a situation in which one does not have control. The second may be experienced in varying degree of intensity as fear of loss of things which give one pleasure. One's earliest pleasurable experiences in life are associated with nursing not only as to food intake but also as to sucking, to being held and cuddled, to being comforted in the presence of pain or other distress.

Patients express these manifestations of anxiety and resistance to modification of food patterns in many ways. At a nation-wide conference held at the Veterans Administration Hospital in Hines, Illinois, in November, 1950[2], sixty nutritionists remarked on the frequency with which they were confronted with such comments as: "I don't see any sense to this"; "The diet will cause more work at home"; "The foods recommended will be too expensive"; "I won't

[2] Institute on Dietetic Service, Veterans Administration Hospitals.

be able to order this diet in a restaurant"; or "I can't take a crazy lunch like this to work." They had observed further that men often want to be known as "big eaters," and even though the diet might not be low in caloric content, it was seen as a restriction. In addition to the reality factors implicit in these remarks, one sees frank anxiety expressed in concern about being unable to take care of oneself, anticipating another's unwillingness to help one, the fear of revealing that there is something wrong with one. The anxiety is often expressed by exaggeration of the normal range of emotional response.

THE PROBLEM OF BREAKFAST

Probably, in the well individual, the meal which is invested with the least drive to eat and which reflects the individual's daily emotional tone, but which is of most nutritional importance, is breakfast. At the above conference, 70 per cent of the nutritionists raised questions about how to get patients to eat breakfast. It is interesting that patients with whom they have the greatest difficulty are those with chronic debilitating diseases such as cord lesions, severe cardiac disorders, tuberculosis, and in some instances, diabetes—diseases which demand the greatest degree of surrender of one's personal freedom and initiative. It had been observed that, particularly in those patients who were most meticulous about their diets, a lapse in their attention to it and a change in their emotional tone were frequently first detected by a loss of interest in breakfast.

It was impossible to give any incontrovertible rules to the nutritionist to meet this problem. However, it was observed that when the clinic team of nutritionist, nurse, social worker, internist and/or psychiatrist was alerted to the appearance of the symptom, one or more of these persons by giving attention to the total person (through either his diet or his psyche) was often able to bring the need into the open and help the patient with the current problem. Then this symptom of failure at breakfast resolved itself.

THE PATIENT'S DILEMMA

Failure to accept and to sustain an appropriate diet, despite the conscious wish to do so, is thus seen to be related to many complex factors. The inability to cope effectively with the anxiety-producing situation is the most important one. However, other things contribute to the patient's dilemma. Frequently, he fails to understand the goals behind the diet therapy, even though the doctor has tried to explain them. The nutritionist may need to realign the nutritional problem for him in terms of the food-taking itself. Again, even though his anxiety about himself is alleviated or he becomes accustomed to his illness and discovers that he makes adjustment to the changes in himself and his environment, he may be unable to sustain the diet because of inability to resist the internal demands for the food.

The studies in obesity are particularly enlightening on this point. Hilde Bruch's (4–10) pertinent pioneer studies showed conclusively that the most important single cause for overweight was overeating. Hamburger (11) confirmed this with detailed psychiatric studies of eighteen patients and was impressed with the aspect of multiple causation. He reported that the multiple emotional meanings of hyperphagia were revealed in response to non-specific emotional tension; as a substitute gratification in reaction to intolerable life situations; as a symptom of an underlying emotional illness, especially depression and hysteria; and as a malignant addiction to food. In reporting the collaborative therapy of an adolescent and her parents, in which the adolescent's symptoms were chiefly an alternation of anorexia and obesity, Berlin (12) and co-workers comment that in both obesity and starvation there are many common mechanisms which could be expected since needs associated with oral activity are predominantly operative in each condition. Further, the intensification of external pressures and reality demands on the individual or the decrease in the demands of the environment to maintain the dietary change may interfere in the sustaining of the therapeutic plan.

MAINTAINING THERAPEUTIC RELATIONSHIPS

What, then, can the nutritionist do to meet the conscious and unconscious organization of the patient which interferes with maintaining diet therapy?

The chief factor in sustaining a therapeutic program is the maintenance of the relationship between the nutritionist and the patient. This means much more than taking a lively and curious interest in the patient; it means keeping active the patient's interest in himself and his well-being and in helping him to feel that the diet therapist's interest in him is out of genuine, professionally tempered concern for him. It means recognition of the actual problems presented by the situation, but it does not mean toleration of inactivity or resistance to the problem. It means appreciation of the emotional lag in learning. Further, it means making an honest effort if the therapy is not going well to re-evaluate the situation and to look for sources of anxiety, but it does not mean that the nutritionist is expected to be a psychotherapist. An honest appraisal of the situation will include alertness to all the reality factors that govern the accessibility of the prescribed diet as well as the personal attitudes of the patient.

TACT AND HONESTY

What are some of the steps in the development and maintenance of such a relationship? The importance of the flexibility of the nutritionist during the first interview can scarcely be overemphasized.

This has been discussed at length in the literature by various writers such as Trulson, Walsh, and Caso (13), Bayles and Ebaugh (14), Weng (15, 16), Jordan (17), Mead (18), Spencer (19), Hall (20), Radke (21), the author (22), and others, but it may be pertinent to review a few points.

The nutritionist needs to approach the first interview with a warm and unjudging attitude. No one knows until the patient tells him by word or behavior why the patient behaves as he does or what his specific experiences mean to him. While we are able to understand one another because of the universals of human experience, we are also often so anxious to solve a problem, to close a gap, to dispose of the task at hand that we assume that like behavior in people is identical in meaning. No attitude could be more unwise. One must first ascertain the facts in the given situation.

Many errors occur because the nutritionist, blocked by her own anxiety or the pressures of the moment, does not listen or listening, does not think of the relatedness of the facts given as the patient discusses his problem. Because the patient says that he prefers butter to margarine does not mean that he uses butter. Meanwhile, one must be equally alert to the manner in which he is handling the facts, to the distortions that he makes of them out of anxiety, shame, anger, or fear. One who is alert will not judge or condemn the patient but will ascertain whether his anxiety and distortion may be useful in maintaining the therapy or whether they will hamper the easy flow of the therapeutic process.

THE TIME AND PLACE

Essential to the obtaining of facts, then, is the nutritionist's warm tact and honest approach to the patient's problem. For her to use this skill, however, the second element essential to the interview, namely a suitable time and place for the interview, must be provided. The nature of the problem and the degree of anxiety cannot be assessed until opportunity to examine has been given to the nutritionist. The initial interview requires the most time, patience, and skill but often determines the sustained relationship. It may be that on the first occasion the patient will feel too anxious to give an adequate dietary history or to comprehend well the directions. The nutritionist needs time to evaluate him. Further, the patient needs time to orient himself to the new diet and to make progress with it.

USING THE PATIENT'S ANXIETY

A third step applicable both to the initial interview and to subsequent ones is skill in making use of the patient's anxiety. Anxiety is often an asset to the therapy. Turned toward the process of healing, it helps both the patient and the nutritionist to sustain the therapy. The patient becomes "anxious to get well" rather than anxious and panic-stricken.

Using the anxiety must be done with the greatest skill. On one hand, the patient must never be falsely reassured in order to relieve an overwhelming anxiety. If, in a few interviews, the nutritionist cannot relieve the patient by reassuring him regarding the long-term values of the diet therapy, she should encourage him to talk again with his physician or talk with other members of the clinic team about his anxiety which interferes in the diet therapy. A false reassurance in a less acutely anxious patient often serves as a deterrent to therapy in another way. It tends to make it easy for the patient to feel that everything will be taken care of for him, almost magically and without active effort on his part. He then becomes both overdependent upon the diet therapist and angered with her when the results do not materialize as easily as he would wish.

In working with patients, the diet therapist is apt to give false reassurance in situations in which her own anxiety is aroused either by the intensity of the patient's anxiety and suffering, the pressure of his tense or hostile reaction to his illness, or by her own fear that the course of the illness will not be smooth. Out of anxious identification with the patient, then, she over-reassures partially to reassure herself.

On the other hand, as opposed to false reassurance, the diet therapist may use the anxiety therapeutically. She may point out in a non-punitive manner that he is anxious and that he can expect to be from time to time. She may show him that his use of the diet therapy will alleviate within its own limits some factors in the illness and that as it is alleviated, he may expect to have less concern and discomfort.

The technique of use of the anxiety has many pitfalls and must always be used with the genuine needs of the patient as an ill person in mind. The therapist must be sure of her own feelings, because the temptation to punish people through the use of food is so universal. Often food is associated by both the diet therapist and the patient with early relationships with parents in which it played a part in the reward and punishment experiences referable to developing approved social behavior. The diet therapist must remember that the patient is sick, that she is seeing only a fragment of his total behavior, that he may react toward her in a hostile or critical way because of feelings transferred to her from other situations. She needs to be firm and realistic but not tense and punitive with the patient, and she should not promise him more than the diet can reasonably accomplish. Also she should not deprive him needlessly.

Further, the therapist is sometimes tempted to punish the patient when in repeated visits it becomes apparent that he is not following her directions, because of her anger if he frustrates her therapeutic goal for him. One must decide early in working with people that they seldom respond in as easy and rational a fashion as they might.

Another pitfall in using the anxiety therapeutically is that of creating false anxiety. Annoyed with the sick person, relatives or other staff members often try to make the therapist carry out their own feelings toward the patient and urge the therapist to "throw a scare" into the patient. Such a technique will be discovered by the patient and destroy completely the carefully developed interpersonal relationship between patient and diet therapist.

Still another factor in using the anxiety therapeutically is to keep in mind that it may not have been aroused only by the dietary problem but by many other factors unknown to the therapist. Therefore, it will not be entirely alleviated by use of the diet therapy. However, freedom to talk with the patient about his discomfort may provide opportunities both to urge him to stay with the prescribed program and to consider other sources of help if his anxiety remains intolerable. In leaving the discussion of the use of anxiety, it should be recalled that food is a strong positive factor in life. Anxiety may also be alleviated by the diet therapist's giving of a diet and her cheerful regulation of his food needs.

PROVIDING A FRAME OF REFERENCE

A fourth step in setting up the relationship with the patient so that therapy will be sustained is that of giving him a reasonable frame of reference within which to function. For example, help him to anticipate in the early interviews some of the problems that will arise, give him some idea of the length of time that he may be under dietary management. Help him to tolerate the anxiety of waiting, since it is rare that immediate results are accomplished. Help him to meet the reality of inconvenience by keeping scheduled appointments promptly, so that he does not have continued anxiety about loss of job or pay in order to see the therapist.

FOLLOW-UP CONTACTS

A fifth consideration in the maintenance of the diet therapy is very careful attention to details in the follow-up visits. Precise knowledge of problems faced or met in obtaining and regulating the diet and of the patient's subjective response to these determine the next step in the patient's care. Follow-up visits often require a shorter time than the initial interview, so that the therapist must be very alert to the patient's behavior in these brief contacts. Otherwise, incipient anxiety or feelings of discouragement will be missed.

Often the patient conceals the intensity of the problem of obtaining the diet because of his feelings of pride and shame about his economic or family situation. He may try to substitute and feel overguilty about changes that he has made in the diet. Again, he may maximize the problems of the diet as a protest against a situation which he feels is restrictive or as a rebellion against things in himself or others which he thinks has caused the difficulty. Alert to these things, the diet therapist can look for signs of tension. Knowledge of the common behavioral patterns of people will be helpful in sustaining the relationship, i.e. an ability to handle without undue concern the unpredictability and mood swings of the adolescent, or to keep oneself from assuming the mother's role, may keep the young diabetic working with the nutritionist.

A final consideration in the sustaining of diet therapy is that of the nutritionist's own responses to her work. She must be aware that behavior from the most silent and passive to the most aggressive has meaning to the patient and to her. She must expect the patient to need to be dependent upon her, to need what she has to give him, but to reject it from time to time. She must be able to tolerate without undue anxiety frustration of her own therapeutic goals by hostile and irritable behavior in her patients. She must continuously study both her academic resources and her patients in order to refine her observation and her awareness of the variation in human behavior. She is rewarded by the return of self-esteem and recreativeness in her patients as they recover their health.

SUMMARY

This paper has discussed some of the emotionally determined motivations of human behavior. It has noted the early preverbal experiences with food which partially condition the attitudes of the individual toward food and the people who regulate food.

Overt and concealed anxieties are often factors which interfere in the orderly changing of food habits appropriate to the nutritional need. Failure to understand the goals, emotional inertia, inability to resist internal demands, or external pressures disrupt the patient's conscious wish to follow the prescribed dietary regimen. Knowledge of the patient's problem in the given situation, skill in the recognition and management of his anxiety about or his resistance to change, and appreciation of the patient as a person will facilitate his nutritional care.

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Fasting vs. Undernutrition

Simple caloric inadequacy, despite modern enthusiasm about specific nutrients and their metabolism, is still a serious problem, states Dr. Ancel Keys in "Caloric Undernutrition and Starvation, with Notes on Protein Deficiency," a part of the second edition of the A.M.A. *Handbook on Nutrition* (New York: Blakiston Company, 1951). Dr. Keys cites his Minnesota experiments, proving that total fasting, while of scientific interest, cannot produce results comparable to chronic undernutrition of the European variety.

Bradycardia, lowered metabolic rate, hypotension, and weakness are effects shared by fasting and undernutrition alike. However, the undernourished are so deeply obsessed by the thought of food that they may evince their interest in all ways from simple phantasy about eating to a preoccupation with scientific agriculture—and niceties of behavior are ignored when they interfere with the full expression of these interests. In people who fast, however, hunger diminishes so that after the third day, it is not disturbing, and in a week it is absent. Physical work tends to increase this loss of hunger more rapidly. In the Minnesota fasting experiment, the second and third days brought incipient nausea with attendant revulsion to food.

Severe undernutrition produces depression and apathy, while the opposite effects—euphoria and excitement—were observed in sedentary fasting.

Pure physical manifestations differing in the two states include: concentration of erythrocytes and leukocytes in the blood, remaining normal in the fasting but producing leukopenia and progressive anemia in the undernourished; pronounced ketosis appearing in a few days of fasting, but ketosis and ketonuria ordinarily absent in undernutrition; and strength remaining the same in fasting while reduced by prolonged underfeeding—although coordination of movements is reduced by fasting but not by semistarvation.

Facts and Fancies about Diet in Renal Disease

Protein of any kind is acceptable in renal disease, according to Drs. George V. Mann and Fredrick J. Stare, Harvard School of Public Health. Much belief still prevails among the laity that red meats are more harmful than white, and that plant proteins are more beneficial than animal proteins. Animals, it has been found, will develop vascular and renal lesions after a large protein intake, but these phenomena have not occurred in human beings according to present knowledge. "The same principles of nutritive value based on the biologic value," Drs. Mann and Stare state, "are applicable to the diets of . . . [renal disease] patients. However, patients with water retention or edema must place importance on a variable content of fixed base, although in nephritis lacking these conditions, no known protein constituents are harmful."—*Excerpted from: A.M.A. Handbook of Nutrition, 2nd ed. New York: Blakiston Co., 1951.*

Cream Pie Fillings Prepared in Multiples of an Eight-Pie Batch[1]

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IT IS common practice in preparing cream fillings in quantity to increase a basic recipe by multiplication. Large batches of fillings prepared by a formula derived by multiplying a small batch recipe tend to produce a consistency too soft for serving. An immediate problem of pie-bakers is to predict the consistency of the cut pie from the flow characteristics of the hot filling. Another problem is the standardization of the end point of cooking cream pie fillings since maximum thickening occurs before the raw starch taste disappears.

The purposes of this study were: (a) to establish formulas for cream pie fillings of different size batches; (b) to develop a reliable test to measure the flow of hot fillings as a means of predicting the consistency of the finished pie; (c) to find a criterion or criteria for determining the end point of cooking the cream pie filling.

EXPERIMENTAL PROCEDURE

The experiments were carried out in the cafeteria kitchen of the Department of Institution Management of the New York State College of Home Economics. The formula for an eight-pie batch was:

Milk, fresh, whole	6 qt.
Sugar, granulated	2 lb. 11½ oz.
Pastry flour, N. Y. State	15 oz.
Frozen egg yolks[2]	1 lb. 1¼ oz.
Salt	1½ Tbsp.
Margarine	6 oz.
Vanilla	4½ Tbsp.

A two-step method for steam-jacketed kettle was used which is different from the one commonly used in the cafeteria kitchen. In the latter method the milk is scalded before the flour and half the sugar are added, the egg and the remaining sugar are added during the last few minutes of cooking; it is essentially a three-step method. Our two-step method was as follows:

Step 1: Two-thirds of the milk and all the sugar were scalded to 98°C. The flour and egg yolks were added to the remaining one-third of the cold milk and blended by machine.

Step 2. The steam pressure was turned off while the cold suspension was being added to the scalded milk-sugar mixture. Failure to turn off the steam pressure when adding the cold suspension to the scalded milk-sugar mixture caused lumpiness in the filling. The filling was stirred vigorously while the cold suspension was being added to the scalded milk-sugar mixture, then stirred at moderate rate in circular motion during the rest of the cooking period. (Continuous vigorous stirring throughout the cooking period caused pastiness.) The mixture was cooked until the raw starch taste disappeared. The steam pressure was turned off and the salt, margarine, and vanilla were added and the filling was then turned into shallow pans, covered with wax paper, and allowed to cool. One qt. of filling was put into a 10-in. baked pie shell.

The conditions of holding the fillings were designed to simulate the production schedule in the cafeteria bake-shop. Each batch was divided into equal lots and treated as follows:

(a) Held at room temperature for 4 hr. in a shallow pan, then stirred, and transferred to a baked pie shell and allowed to stand at room temperature for an additional 2 hr.[3]

(b) Held in the refrigerator for 4 hr. in a shallow pan, then stirred, and transferred to a baked pie shell and allowed to stand at room temperature for an additional 2 hr.

It should be noted that in the production schedule of the cafeteria about 2 hr. would be taken up with

[1] Reported from the unpublished master's thesis of Mary N. Billings. This is part of a larger project titled, "The Quality of Products Prepared from New York State Soft Wheat Flour: C. The Effect of Variations in Quantity Formulae and Procedures." Received for publication July 9, 1951.

[2] Voltex—frozen egg yolks and egg whites, salt, and stabilizing sirup composed of dextrin, dextrose, maltose, and water.

[3] Analyses for hemolytic staphylococci were made on a number of cream pie fillings prepared and held in this manner, using the Standard Methods of the American Public Health Association (1). All analyses were negative.

the filling, preparing the meringue, baking, and subsequent holdings of the pies prior to service.

It was found in preliminary tests that, when a formula for a 1-pie quantity was multiplied six times and ten times, it was necessary to adjust the amount of flour and/or milk to obtain fillings acceptable in consistency. In the present study, tests were conducted on different size batches of fillings to establish the proportion of flour per quart of milk that would result in pie fillings of a consistency acceptable for serving. The formula for the 8-pie batch of filling was increased to 16-, 24-, and 32-pie batches and suitable adjustments worked out.

A modification of the measurement of linespread used by Grawemeyer and Pfund (2) was used to measure the consistency of the hot fillings. The reliability of the linespread data as a means of predicting the consistency of the finished pies was assessed by relating these data to ratings of judges.

To determine the end point of cooking, the pie fillings were tasted at intervals and as soon as the raw starch taste had disappeared, the temperature of the filling and the cooking time were recorded.

Twelve members of the home economics staff judged the cream fillings for acceptability.

RESULTS AND DISCUSSION

Establishing Formulas

In the fillings where the multiple of the formula was modified by increasing the amount of flour, "very acceptable" fillings were achieved when the following amounts of flour per quart of milk were used: $3\frac{1}{8}$ oz. for the 8-pie batch; $3\frac{3}{4}$ oz. for the 16-pie and 24-pie batches; and $4\frac{1}{4}$ oz. for the 32-pie batch. It may be noted that for the above amounts, with the 8-pie batch of cream filling as the starting point, the flour was increased by 10 per cent for the 16- and 24-pie batches and by 35 per cent for the 32-pie batch. This increase indicates that if fillings of acceptable consistency are to be obtained, adjustment in the proportion of flour to liquid should be considered when multiplying a formula. To obtain the desired yield, the amount of milk (6 qt. for the 8-pie batch) was increased by the appropriate multiple for the larger size batches.

The increase in proportion of flour to liquid for different batch sizes was necessary to compensate for the reduced thickening of the flour. Factors contributing to the reduced thickening were: slower rate of heating and lower final temperature as the size of batch was increased.

Flow of Hot Fillings

In Figure 1 are shown the values of radius of spread of hot fillings of "very acceptable" pies and the proportion of flour to milk in relation to number of pies in the batch. Such a graph might be valuable for determining the proportion of flour per quart of liquid likely to give filling of acceptable consistency for other batch sizes between those for which the proportion of flour to liquid has already been established.

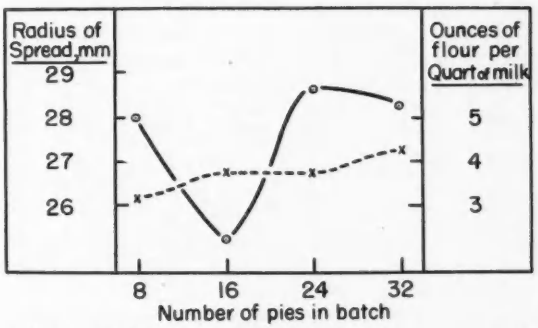

FIG. 1. *Radius of spread of hot filling of "very acceptable" pies and proportion of flour to milk in relation to number of pies in batch.*

The average radius of spread of the hot fillings was 26.7 mm. for the 8-pie batches, 27.2 mm. for the 16-pie batches, 28.5 mm. for the 24-pie batches, and 26.8 mm. for the 32-pie batches.

The radius of spread of hot fillings was considered a reliable and practical measurement for predicting the consistency of the final product. The values established here for acceptability are directly applicable only to cream pie fillings prepared from soft wheat flour using the formulas and procedures of this study. However, these values may serve as a guide for other types of fillings.

End Point of Cooking

The average temperature and cooking times which coincided with the disappearance of the raw starch taste were 83°C. and 6 min. for the 8-pie batches; 83°C. and 8 min. for the 16-pie batches; 79°C. and 9 min. for the 24-pie batches; and 78°C. and 14 min. for the 32-pie batches. These cooking times do not include time for heating the milk-sugar mixture to 98°C.

In a number of the batches, the temperature of the filling remained at the "final temperature" for one or several minutes before the raw starch taste disappeared. Tasting should, therefore, be considered a more reliable criterion for determining the end point than "final temperature." The above temperatures and times might vary with other rates of heating, but under the rate of heat used in this study they were considered the minima at which the fillings were adequately cooked.

The two-step method of cooking the fillings eliminated the process of cooking the milk, flour, and sugar suspension to the stage of doneness before the egg was added. Scorching was not encountered with the two-step method. When the sugar was added to the cold milk, the milk appeared watery. It is believed that the sugar dispersed the milk proteins, raised

their coagulation temperature, and prevented their precipitation on the sides and bottom of the kettle. With the elimination of the precipitation of the proteins, the scorching was eliminated.

SUMMARY

The purposes of this study were: to establish formulas for cream pie fillings prepared in batches of different sizes; to develop a reliable test to measure the flow of hot fillings as a means of predicting the consistency of the finished pie; and to find a criterion for the end point of cooking.

Adjustment in the amount of thickener was necessary to compensate for reduced thickening of the flour. "Very acceptable" pie fillings were obtained when, with the 8-pie batch as the starting point, the flour was increased by 10 per cent for the 16- and 24-pie batches and by 35 per cent for the 32-pie batch.

The radius of spread of hot fillings was found to be a reliable and practical objective measurement for determining the flow of the hot filling and for predicting the consistency of the finished pie.

It was found that tasting for the disappearance of raw starch in the cream fillings was a more reliable criterion for determining the end point of cooking than final temperature or time of cooking. Both temperature and time were found to depend on the rate of heating, which under practical conditions of cooking cream fillings is difficult to control.

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Food Preferences in Montana

In 1946–47, a survey of food preferences was made in Montana. In the study, reported by Bertha Clow, Department of Home Economics, Montana State College, Bozeman, 1000 questionnaires were distributed to high school students and adult extension groups in an effort to learn preferences for specific foods. The questionnaire included a total of 115 items, with spaces to indicate four degrees of acceptability: "willing to eat often," "willing to eat occasionally," "unwilling to eat," and "have never tasted."

(a) The most acceptable foods were found to be: white bread, oranges, butter, white potatoes, chicken, canned peaches, fresh apples, head lettuce, fresh tomatoes, beef, ice cream, whole milk, fresh peaches, and canned pears.

(b) The least acceptable foods were: kidney, brains, canned milk, buttermilk, margarine, mutton, tongue, skim milk, rabbit, dandelion greens, eggplant, hominy, oysters, and rutabaga. The glandular meats were important on the list of "have never tasted" foods, and less than half of the people questioned were willing to eat liver often.

(c) Although white bread was preferred over whole wheat, more than half the people were willing to eat whole wheat bread often.

(d) Tomatoes were more acceptable fresh than canned, while canned peaches, pears, and apricots were preferred over the fresh fruits.

(e) Several vegetables and one fruit were important on the list of foods never tasted: kale, endive, Brussels sprouts, soy beans, eggplant, broccoli, dandelion greens, and avocado.

Unsalted Margarine Available in Florida

Salt-free margarine, for the benefit of people on a low-sodium diet, is now available throughout Florida, due to the cooperation of Jacksonville dietitians, a dairy distributor, and a manufacturer. The new product is packed in ½-lb. pats rather than quarters and is labeled "Salt Free Vegetable Oleomargarine" with the distributor's name and the list of ingredients.

This development comes as an outgrowth of a suggestion made by Jacksonville dietitians to a local dairy which has state-wide distribution. The dairy man contacted his manufacturer, who began producing the salt-free margarine within a month. According to Vera W. Walker of Jacksonville, it can all be credited originally to the meeting of the state diet therapy section chairmen in Cleveland at the Annual Meeting of The American Dietetic Association last October. At this meeting, one of the topics discussed was the high cost of sweet butter and the difficulty of preparing unsalted margarine from the ordinary product. At that time, it was suggested that dietitians get in contact with margarine producers to see if it would be feasible to make such a product.

It is the hope of the Florida dietitians that this cooperation between dietitians, distributors, and manufacturers will be beneficial to all concerned.

Influence of Variety on Yield of Potatoes Prepared for Cooking[1]

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WHEN inedible material is discarded in the preparation of raw foods for cooking, there is a variable amount of weight loss which affects both the total amount of food available for consumption and the cost of food. In efforts to obtain higher yields and thus lower the over-all cost of food, it is important to know the factors responsible for high losses when food is prepared for cooking. Information on yields of food as prepared is valuable also in estimating the amounts of food needed to provide a given number of portions of a given size and in estimating the nutritive value of diets as consumed.

This paper presents information on the yield of potatoes prepared for boiling and for French frying by machine- and hand-paring. Although paring of potatoes before cooking is not recommended from the standpoint of retaining the highest nutritive value, it is a necessary procedure for some methods of cooking.

There is general agreement among workers that size, grade, quality, and variety of potatoes are important influences on yield obtained after preparation for cooking. Previous reports (1–3, 5) have shown that large tubers give a relatively greater yield than small ones. Paul, Cole, and Knight (3) reported that when potatoes of comparable size were used, the yield after paring and trimming for boiling was greater for U. S. No. 1 grade than for U. S. No. 2 grade. The effect of grade was not consistent, however, since the yield from U. S. Commercial grade was also greater than from U. S. No. 2. Werner (5) reported that more usable material was obtained from U. S. No. 1 grade, medium-size Triumph potatoes than from the same size of lower grades—U. S. No. 2 and culls. Wood (6) reported some difference in yield due to grade, but found that differences between graded samples were not as great as might have been expected. Wood also reported, as have Dow (2) and Werner (5), that defects within grade are one cause of variation in yield of pared potatoes. Shape of tubers and number and depth of eyes were also reported by Dow to have an effect on prepared yield. Wright and Whiteman (7) confirmed these results recently by reporting that smooth varieties with shallow eyes gave higher yield than those of irregular shape or those with deep eyes.

Results from studies showing the effect of machine- vs. hand-paring are variable, perhaps because of added effects of size, grade, quality, and variety. Wood (6) reported a range of 75 to 78 per cent average yield from machine-paring and 70 to 74 per cent average yield from hand-paring. Welch, Hibler, and Wilson (4) in a more limited study also found little difference between these two methods although percentage yields (range of 86 to 87 per cent with fall potatoes) were higher than those reported by Wood.

The information presented here on yield of potatoes prepared for cooking was obtained during a study of the cooking quality of important commercial varieties of potatoes, each from two or three growing areas. These data were obtained on harvest and storage samples of crops grown in 1947, 1948, and 1949, and on harvest samples of the 1950 crop.

In 1947, 25 lots of potatoes were used. In the three succeeding years, the number of lots was 17, 18, and 16, respectively. All potatoes had been graded U. S. No. 1, Size A, but many lots obtained in 1947 showed more damage due to cuts, bruises, scab, and other defects than lots in the other three years.

Tubers for all tests were selected for freedom from serious defects. Samples to be boiled were machine-pared and were selected for uniformity of size within each sample lot. Potatoes to be French fried were pared by hand; some variation in tuber size was necessary to obtain an adequate sample. In 1947, eight replications were made on all lots in machine-paring tests and five replications in hand-paring tests. In 1948 and 1949, all paring was done by machine and twelve replications were made; in 1950, paring was done by machine and one test only was

[1] Received for publication August 10, 1951.

TABLE 1

Percentage yield of pared potatoes from machine- and hand-pared samples from nine varieties of 1947 crop

LOCATION	MACHINE-PARING*			HAND-PARING†		
	Unpared weight	Pared weight	Yield‡	Unpared weight	Pared weight	Yield‡
Chippewa						
	gm.	*gm.*	*%*	*gm.*	*gm.*	*%*
Maine	1318	868	65.9	857	749	87.4
Michigan	1201	829	69.0	876	754	86.1
Average	1260	848	67.3	866	752	86.8
Green Mountain						
Maine (heavy soil)	1375	891	51.1	900	775	86.1
Maine (light soil)	1377	909	56.7	981	847	86.3
New York	1610	1207	75.0	862	723	83.9
Average	1468	904	61.6	914	782	85.6
Irish Cobbler						
Maine	1181	669	56.6	832	694	83.4
New York	1463	986	67.4	832	686	82.5
Wisconsin	1425	885	62.1	899	771	85.8
Average	1356	847	62.5	854	717	84.0
Katahdin						
Colorado	1577	1244	78.9	916	806	88.0
Maine	1319	930	70.5	856	759	88.7
Pennsylvania	1434	1090	76.0	788	677	85.9
Average	1443	1088	75.4	853	747	87.6
Russet Burbank						
California	2079	1527	73.4	1144	923	80.7
Idaho (irrigated)	1573	1158	73.6	853	736	86.3
Washington	1818	1352	74.4	966	835	86.4
Average	1823	1346	73.8	988	831	84.1
Russet Rural						
Michigan	1208	975	80.7	872	726	83.3
Pennsylvania	1263	998	79.0	864	719	83.2
Average	1236	986	79.8	868	722	83.2
Sebago						
Maine	1426	1083	76.0	815	724	88.8
Washington	1633	1366	83.6	875	767	87.7
Wisconsin	1458	1181	81.0	959	847	88.3
Average	1506	1210	80.3	883	779	88.2
Triumph						
Colorado	1538	1041	67.7	846	724	85.6
Nebraska	1118	624	55.8	858	710	82.8
North Dakota (light soil)	1675	1129	67.4	958	795	83.0
Average	1444	931	64.5	887	743	83.8
White Rose						
California	1968	1438	73.1	1153	980	85.0
Idaho	1706	1280	75.0	971	828	85.3
Washington	1736	1227	70.7	960	826	86.0
Average	1803	1315	72.9	1028	878	85.4

* Eight tubers, 45 seconds paring time; 8 replications.
† Three to 4 tubers; 5 replications.
‡ Average per cent yield for varieties obtained from corresponding average weights.

made. Data presented here were obtained from a total of 686 tests.

Each cooking sample was washed, dried, and weighed before paring. For removing skins mechanically, a motor-driven abrasive peeler of 20-lb. capacity, approximately 8 in. deep and 12 in. in diameter, with inside walls and base of carborundum was employed. The base consisted of a revolving disc alternately concave and convex on four sides. When the machine was running, this uneven surface tossed the potatoes and kept them revolving against the abrasive, thus removing the skins, which were washed away by a stream of water from above. Since the weight of each cooking sample did not make a full load in the machine, the time of operation was necessarily shortened from the recommended 2 min. Preliminary tests were made to establish the time needed for adequate paring.

A swivel-blade vegetable parer was used for the hand-paring. All samples, whether pared by hand or machine, were trimmed and eyed with the vegetable parer, dried, and weighed. Prepared yield in per cent of unpared weight was determined.

DISCUSSION OF RESULTS

Percentage yields of raw pared potatoes from samples of different varieties and from different locations are shown in Tables 1 and 2. Data from all storage periods have been combined for each year, since differences relating to storage conditions were not great enough to be significant.

In all samples from the 1947 crop, higher percentage yields were obtained by hand-paring than by machine-paring methods as shown in Table 1. Yields from samples pared by hand ranged from 80.7 to 88.8 per cent compared with yields from machine-paring of 51.1 to 83.6 per cent. In general, fewer tubers of somewhat larger size were used for hand-paring than for machine-paring, which may have contributed to the higher yield from hand-pared samples. Little variation in percentage yields was shown between varieties or between samples from different locations when potatoes were pared by hand. Apparently, in hand-paring, the contour of the potato was followed closely and varietal characteristics of irregular shape and deep eyes were not so great an influence as they were when skins were abraded by a mechanical peeler.

Though not measured in this study, the time involved in hand-paring would be greater, thus making this method more costly and impractical for large quantity preparation where labor costs are high.

Differences in percentage yield of potatoes pared for cooking by machine were found between samples from different varieties and also between samples from different locations during four successive years as shown in Tables 1 and 2. Seasonal differences were also found within each variety and location. Except for the sample of New York Green Mountains,

TABLE 2

Percentage yield of pared potatoes obtained by machine-paring of selected samples from 1948, 1949, and 1950 crops

LOCATION	1948*			1949*			1950†			THREE-YEAR AVERAGE YIELD
	Unpared weight	Pared weight	Yield‡	Unpared weight	Pared weight	Yield‡	Unpared weight	Pared weight	Yield‡	
Chippewa										
	gm.	*gm.*	*%*	*gm.*	*gm.*	*%*	*gm.*	*gm.*	*%*	*%*
Indiana	993	770	77.5	957	736	76.9	—	—	—	77.2
Maine	895	709	79.2	919	711	77.4	933	686	73.5	76.7
Michigan	585	475	81.2	866	686	79.2	972	750	77.2	78.9
New York	—	—	—	990	769	77.7	—	—	—	77.7
Average	824	651	79.0	933	726	77.8	952	718	75.4	77.6
Green Mountain										
Maine (heavy soil)	953	748	78.5	915	663	72.5	1017	699	68.7	73.1
Maine (light soil)	921	743	80.7	971	629	64.8	938	712	75.9	73.6
New York	919	706	76.8	852	633	74.3	1035	786	75.9	75.7
Average	931	732	78.6	913	642	70.3	997	732	73.4	74.2
Irish Cobbler										
Maine	727	473	65.1	994	699	70.3	817	525	64.3	66.9
North Dakota	838	605	72.2	925	694	75.0	891	640	71.8	73.1
Wisconsin	914	652	71.3	878	643	73.2	879	594	67.6	70.7
Average	826	577	69.9	932	679	72.9	862	586	68.0	70.3
Katahdin										
Colorado	876	724	82.6	1046	854	81.6	1081	848	78.4	80.8
Maine	907	758	83.6	880	710	80.7	1025	814	79.4	81.2
Pennsylvania	1144	955	83.5	1134	921	81.2	1183	946	80.0	81.5
Average	976	812	83.2	1020	828	81.2	1096	869	79.3	81.2
Russet Burbank										
Idaho (irrigated)	1249	1031	82.5	869	699	80.4	1495	1219	81.5	81.6
Idaho (non-irrigated)	1041	863	82.9	986	786	79.7	1151	921	80.0	80.9
Washington	1106	911	82.4	1215	989	81.4	1265	1049	82.9	82.2
Average	1132	935	82.6	1023	825	80.6	1304	1063	81.5	81.6
Triumph										
North Dakota (heavy soil)	678	492	72.6	886	657	74.2	782	532	68.0	71.7
North Dakota (light soil)	802	630	78.6	943	722	76.6	881	660	74.9	76.6
Average	740	561	75.8	914	690	75.5	832	596	71.6	74.3

* Six tubers; 30 seconds paring time, except Russet Burbank—25 seconds; 12 replications.

† Six tubers; 30 seconds paring time, except Russet Burbank—25 seconds; 1 test only was made.

‡ Average per cent yield for varieties obtained from corresponding average weights.

yields from variety and location were consistently lower in 1947 (Table 1) than in the three succeeding years (Table 2). Lower yield in 1947 may be attributed partially to the longer time of 45 seconds allowed for machine-paring that year as compared with 30 seconds in the other three years. In addition, potatoes used in 1947 were of poorer quality.

Yields for each variety from all locations were averaged for the three-year period. A paring time of 30 seconds was maintained throughout except for Russet Burbank; for this variety, a 25-second paring time was used. A comparison of these data (Table 2) shows that Russet Burbank gave the highest average yield of 81.6 per cent and Katahdin next highest with 81.2 per cent. Average yield for Chip-

TABLE 3

Differences in percentage yield of potatoes obtained by machine-paring of six varieties used during four successive years as shown by rank

RANK	1947		1948		1949		1950	
	Variety	Yield	Variety	Yield	Variety	Yield	Variety	Yield
		%		%		%		%
1	Katahdin	75.4	Katahdin	83.2	Katahdin	81.2	Russet Burbank	81.5
2	Russet Burbank	73.8	Russet Burbank	82.6	Russet Burbank	80.6	Katahdin	79.3
3	Chippewa	67.3	Chippewa	79.0	Chippewa	77.8	Chippewa	75.4
4	Triumph	64.5	Green Mountain	78.6	Triumph	75.5	Green Mountain	73.4
5	Irish Cobbler	62.5	Triumph	75.8	Irish Cobbler	72.9	Triumph	71.6
6	Green Mountain	61.6	Irish Cobbler	69.9	Green Mountain	70.3	Irish Cobbler	68.0

pewas was 77.6 per cent. Triumph, Green Mountain, and Irish Cobbler potatoes were in the group giving the lowest average yields of 74.3, 74.2, and 70.3 per cent, respectively. The highest percentage yield for any individual lot tested was 83.6 per cent for Maine Katahdin, the lowest was 64.3 per cent for Maine Irish Cobbler. Varietal characteristics, such as size, regularity of shape, and number and depth of eyes, were undoubtedly factors responsible for variations in yield.

Differences within varieties due to location where grown were greater for some varieties than others. The averages for the same three-year period for samples of Katahdin potatoes from three sources—Colorado, Maine, and Pennsylvania—showed only slight differences in percentage yield. Considerable variation was shown in yields for samples of Irish Cobbler grown in different locations. These results showing influence of variety and location, though obtained from small samples subjected to machine-paring for approximately 30 seconds, compare favorably with results reported by Wright and Whiteman (7) obtained on 10-lb. samples pared by machine for 8 min. Samples used in both studies were selected for uniformity of size and freedom from defects.

Yearly averages in percentage yields obtained during all four years are ranked in Table 3 by order of variety. Yield from all locations have been combined, and small differences in paring time have been disregarded. In successive order, Katahdin and Russet Burbank varieties had consistently highest percentage yield except in 1950 when the order was reversed. There was little difference between percentage yields of these two varieties. The Chippewa variety consistently ranked in third place. Irish Cobbler, Triumph, and Green Mountain varieties were always the three lowest for percentage yield but their rank varied from year to year.

SUMMARY

A study of machine- and hand-paring of selected samples of potatoes showed the influence of variety in the percentage yield of pared potatoes. Data reported were obtained over a four-year period and represent a total of 686 paring tests.

When paring was done by machine, the varieties characterized by smooth, regular shape and shallow eyes showed the highest yield. These included Sebago, Russet Rural, Katahdin, and Russet Burbank. Green Mountain and Irish Cobbler varieties showed the lowest yield.

When potatoes were pared by hand, differences in in variety and growing area had little effect on percentage yield of prepared potato. Percentage yields from hand-paring of potatoes were considerably greater than those from machine-paring.

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Vitamin A in Allergy

The use of vitamin A to combat allergy arises from the function ascribed to this vitamin of keeping dermal and mucosal tissue in a normal state. For the same reason, vitamin A has been used for the prevention of the common cold. In the experience of many allergists, the use of vitamin A has offered little encouragement.—*From Queries and Minor Notes, J.A.M.A. 148: 328 (January 26), 1952.*

Effect of Preparation Method on Thiamine Availability in Split-Pea Soup[1]

WINIFRED C. BESSEY[2] and ELLA WOODS, Ph.D.

Idaho Agricultural Experiment Station, Moscow

DRY, mature peas seem to appear in the American diet more frequently as split-pea soup than in any other form. In the older cook books, recipes for this soup (1, 2) directed that the peas be soaked overnight, drained, and simmered 3 to 4 hr. The newer recipes (3), such as those on packages of split peas, suggest that the peas be boiled rapidly for 1½ hr. without previous soaking. The rapidly boiled soup has a taste and texture which is as desirable as that made according to the older method and has the added advantage of being less time-consuming. There is, however, the question of the effect of the higher temperature on the nutrients of the peas.

This is a report of a study of the availability of thiamine in split-pea soup made by two methods of cooking.

EXPERIMENTAL PROCEDURE

Split peas of the Alaska variety were used. Soups were made with distilled water without any seasonings. The quantity made at one time was ½ lb. split peas in 1 qt. water.

For *Soup I*, the peas were rinsed and put directly into boiling water without previous soaking. The boiling was continued for 1½ hr. Water was added as needed to maintain volume.

For *Soup II*, the peas were rinsed and put into 1 pt. distilled water to soak overnight. In the morning, another pint was added and the peas were simmered for 1½ hr. Simmering was interpreted to mean cooking at a temperature such that the bubbles rise and break beneath the surface.

Each soup was made into purée, blended, and frozen in ice cube trays for keeping until used. For feeding experiments with rats, to determine the nutritive value of the soups produced by both methods, 3 gm. soup were considered comparable to 1 gm. raw split peas. To test this assumption, 3-gm. samples of the soups were dried at frequent intervals at a temperature of 45°C. The dry matter averaged 33 per cent for Soup I and 32 per cent for Soup II.

The animals used were weanling rats housed in individual cages with free access to the basal diet and to distilled water. They were weighed at weekly intervals, and food consumption was recorded.

The basal diet was made up in kilogram lots and contained the following: Labco casein, 180 gm.; autoclaved peanuts, 100 gm.; autoclaved yeast, 50 gm.; Osborne and Mendel (4) salt mixture, 40 gm.; cod-liver oil, 20 gm.; dry yeast, 1.5 gm.; and cane sugar, 608.5 gm. The dry yeast supplied approximately 0.225 mcg. thiamine per gram of diet. This was included because in the experience of this laboratory, the neuropathologic symptoms characteristic of thiamine deficiency in rats occur with greater regularity when the diet contains a small but inadequate amount of thiamine. On a thiamine-free diet, many rats die without showing these symptoms.

The availability of the thiamine in the soups was studied in two ways: (a) by its therapeutic value for the characteristic neuropathology and (b) by its value for growth.

With the first method, which was a slight modification of the U. S. Pharmacopoeia method (5), each rat was maintained on the basal diet without supplement until the characteristic symptoms appeared. If the deficient rat was unable to right himself when twirled by the tail, he was considered ready for the test dose. He was then given a known amount of pure thiamine in a single dose, and the number of days he remained symptom-free was recorded. When the neurologic difficulty again appeared, he was given a weighed dose of the test food and the number of symptom-free days was again noted. This procedure was repeated with another dose of pure thiamine followed by a different form of peas. Thus, each rat became his own control and could be used for all the test foods, provided the doses contained

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enough thiamine and they were eaten promptly.

In the growth method, weanling rats were divided into four groups controlled for sex, weight, and litter. The basal diet of each group was the same as in the therapeutic method. One group received a supplement of thiamine; another group, a supplement of Soup I; a third, a supplement of Soup II; and the fourth was left on the basal diet. The supplements were given six times a week for six weeks.

RESULTS

A summary of the results obtained with the therapeutic method is given in Table 1. The response of twenty-one different rats is included. Each received at least two doses of thiamine and one of peas in some form. Some rats received each of the pea doses and four of thiamine. None of the averages includes all twenty-one rats. The refusal of a rat to eat a dose of peas eliminated him from the experiment. This difficulty was encountered more frequently with Soup II than with either Soup I or raw peas. In Table 1, the average number of symptom-free days as a result of 5 mcg. thiamine is calculated from all the thiamine responses of those rats receiving that particular pea dose.

Based upon a comparison of the symptom-free days, 1 gm. raw peas furnished more than 5 mcg. available thiamine and 3 gm. of each soup less than 5 mcg., with Soup I doing somewhat better than Soup II.

In Table 2 are summarized the results from the growth method. By this method there appeared to be no difference between the soups, either in promoting gain or in food consumption. The 3-gm. soup gave slightly, although not significantly, better gain than 5 mcg. thiamine, and the slight increase in consumption of the basal diet by the thiamine-fed rats was more than offset by the dry matter in the soups. All the supplemented rats made better gains than the rats on the basal diet.

DISCUSSION

From the biologic responses, either in a therapeutic test or in a growth experiment, there appears to be little difference in the availability of the thiamine in split-pea soup, whether it is prepared by boiling 1½ hr. or by simmering for the same length of time.

TABLE 1

Average symptom-free days for rats after doses of split peas and after 5 mcg. doses pure thiamine

NUMBER OF RATS	DOSE	AVERAGE SYMPTOM-FREE DAYS	
		Peas	Thiamine
17	1 gm. raw split peas	12.5	10.8
17	3 gm. Soup I	8.0	10.0
13	3 gm. Soup II	6.9	11.0

However, part of the thiamine found in the raw peas was lost in cooking the soups.

At the time the biologic studies were made, facilities were not available for the chemical analysis of the peas and soups. When they became available, Porter and Harvey (6) in this laboratory analyzed raw split peas and soups made by the recipes used in the biologic study. The method followed was based on that of Conner and Straub (7) which makes use of the fluorescence produced by thiochrome in ultraviolet light. The extractant used was 0.1 N sulphuric acid and the enzyme was Clarase in sodium acetate (*p*H 4.5). The incubation period was 16 to 24 hr. at 45°C., and the thiamine was adsorbed on a column of prepared Decalso. Thiochrome was produced by a freshly prepared solution of potassium ferricyanide in sodium hydroxide and extracted in isobutanol. A Coleman Model 11 Spectrophotometer fitted with a UV Illuminator was used to read the fluorescence. Values found by this method showed that the thiamine content of raw split peas varied considerably, depending upon length of storage. This method confirmed the biologic finding that there is a loss of thiamine when the peas are made into soup. An average value of 15.1 was found for the percentage loss when the Soup I recipe was used and 11.2 when the second recipe was used.

Because the older recipes had called for a simmering period longer than 1½ hr. and because taste and texture were poor with that amount of cooking, the thiamine content of a soup simmered 2½ hr. was determined by the thiochrome technique. At the end of 1½ hr., the loss of thiamine in this soup was 10.7 per cent, but at the end of 2½ hr. simmering, the loss was 19.4 per cent. Soup made at the same time from the same lot of split peas and boiled 1½ hr. had lost 21.0 per cent of its thiamine.

If the thiamine content of Soup II as fed was greater than that of Soup I, the difference was less than the biologic methods used could determine. From the results obtained in this study, it does not appear that the older recipes with the longer simmering time conserve the thiamine in split-pea soup better than the new ones with the shorter boiling time.

TABLE 2

Average weight gain of rats in six weeks on a thiamine-deficient diet supplemented with pea soup or pure thiamine

NUMBER OF RATS	DIET	INITIAL WEIGHT	GAIN	BASAL DIET
		gm.	*gm.*	*gm.*
10	Basal	39.2	26.0	194.1
10	Basal + 5 mcg. thiamine	39.3	100.0	338.9
10	Basal + 3 gm. Soup I	39.0	107.9	317.0
10	Basal + 3 gm. Soup II	39.3	107.6	313.4

SUMMARY AND CONCLUSION

The availability for rats of thiamine in split-pea soup made by two methods of cooking has been determined by two biologic methods of study.

The difference in availability, if any, was less than could be measured by either the therapeutic or the growth method for rats.

Unpublished chemical data, obtained in this laboratory by the thiochrome method from supplies of split peas other than those fed, showed that soup simmered for 1½ hr. contains on the average somewhat more thiamine than soup boiled for the same length of time. However, when the soup had simmered as long as 2½ hr., the difference between the two was negligible.

From the results of this study, it is concluded that for the conservation of thiamine in split-pea soup, the method of simmering 3 to 4 hr. holds no advantage over boiling for not more than 1½ hr.

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Israel's Food Problems

With the influx of new immigrants from the Middle East and North Africa, food supplies already scarce in Israel are getting smaller. Meat, eggs, egg powder, fresh milk, powdered whole milk, coffee, sugar, and potatoes are rationed, and rations are often unobtainable. Even for unrationed items, such as green peppers, tomatoes, or eggplant, the housewife must queue up for hours, day after day, and often comes home empty-handed when supplies have been exhausted before her turn comes. During my stay in Israel from September to October, fruit was not available except for lemons. But in the rainy season (November to April) citrus fruit is abundant and cheap and vegetables are more plentiful.

I also found some brighter aspects in the food situation—an adequate supply of frozen fish, dry skim milk, lebenia (a type of fermented milk), and really good dark bread—enough to go around. White bread is sold only for shabbat and holidays.

The Israeli government is fully aware of the influence of nutrition on the health and morale of its citizens. United States experts have advised on the foods to purchase that are cheap and of high nutritive value. It is the job of the Institute for Nutrition Education under the Ministry of Agriculture to help the public accept and make wise use of the food resources. Extensive programs have been developed with the help of private organizations.

A large number of the population is reached. Meals for immigration camps, schools, and institutions are planned and supervised. Guidance is given to restaurants and factory canteens. The Nutrition Institute trains dietitians, food instructors, and supervisors. The housewife is helped in feeding her family through newspaper articles and nutrition classes.

The new immigrants need the most help. They arrive with strange food customs, have often never handled fork or spoon, and ration books are unknown to them. Studies have shown that the greatest deficiency in their diets is their inadequate intake of animal protein. Available sources of these foods, such as frozen fish, dry skim milk, and egg powder, are foreign to them, and guidance must be given in their use.

A fertile field for teaching was found to be in the "ma'abara," the rural transit camp to which the immigrant moves after he leaves the large immigrant camp. During his stay in the immigrant camp he is fed from central kitchens, while in the ma'abara the new Israeli is on his own. There are about 180 ma'abarot which house up to 10,000 people. Families live in one-room cubicles of corrugated metal or in tents, where they stay until their permanent houses are finished. By this time most of them are accustomed somewhat to life in Israel, the men have found work, and only women, small children, and old people remain at home. Since housekeeping is very sketchy due to circumstances, the women have time on their hands.

In addition to food demonstrations in the ma'abaro, the prenatal and infant welfare stations, of which there are thirty-eight, are visited at least once a month by a nutrition instructor who teaches mothers and nurses about food and shows methods of food preparation.

The Nutrition Institute also supervises nutritional education in the schools. Every child learns the fundamentals of good nutrition and food preparation and the children become well versed in substituting one food for another of similar value.—*Martha Davidson, Nutritionist, New York City Department of Health.*

Editorial

RATIO OF DIETITIANS TO PATIENTS AND EMPLOYEES

CHARLES U. LETOURNEAU, M.D.

Secretary, Council on Professional Practice, American Hospital Association

MARGARET GILLAM

Dietetics Specialist, American Hospital Association

RUTH M. YAKEL

Executive Secretary, The American Dietetic Association

The number of employees required for modern hospital service has not been and probably cannot be defined precisely. Dr. Malcolm T. MacEachern surveyed a group of representative general hospitals in 1930 and found that there were an average of nine employees to ten patients. Dr. Warren P. Morrill in 1939 found an increase of 34 per cent in numbers of employees in this nine-year period with a ratio of 1.21 employees per patient. A similar survey conducted today would show a further increase. These figures are of no more than academic interest. There are many variable factors in establishing an employee-patient ratio, and both authorities concluded that no general rule can be so formulated as to be safely applied to any individual hospital.

The ratio of dietitians to patients is but a specific example of the general problem. The factors that affect this ratio and the ratio of dietitians to other employees are numerous in any given hospital, but the following principles are usually applicable.

Work Volume. Before any ratio can be considered, the total number of persons to be fed must be known. This number would include both patients and employees, with allowances for seasonal changes in hospital occupation by patients and for transient personnel such as visiting physicians, medical students, and clinic patients who partake of a limited number of meals.

It is well known in most hospitals that the highest consumption of food occurs at the noonday meal. This may affect the ratio of dietitians to work volume.

Patient Turnover. The number of patient-meals served may remain constant regardless of the turnover. Nevertheless, the administration of the dietary department is increased when the turnover of patients is great. In a short-term general hospital, there will be more new diets to be planned, diets will be changed more frequently, and additional instructions must be given to patients to be discharged. The long-term hospital for chronic illness may serve the same number of patient-meals but require fewer dietitians.

Therapeutic Diets. The type of patient has a definite bearing on the number of dietitians required. A high census of patients assigned to the internal medicine service, for example, will require a larger number of modified diets. This means more planning, organization, and administration. Effective dietary management and instructions to patients take time, and additional dietitians are required for such specialized work.

Quality of Food Service. The most intangible factor in computing a ratio of dietitians to patients is the quality of service to be rendered both to patients and to personnel. The more effective the supervision, the greater is the likelihood for the production of food of high quality both in nutritional adequacy and palatability. The successful supervisor must have a specialized knowledge of the work to be done. The dietitian has this specialized knowledge and is the logical person to supervise or to delegate supervisory responsibilities. Adequate staffing may make an appreciable difference in the quality of food served.

Variety of Food Served. When patients and employees are given a choice of food, additional planning by the dietitian is required. The extent of the choice is a factor in determining staff requirements.

It is also the policy in some hospitals to serve special meals to groups. This may be a tea for the ladies' auxiliary, a clinical meeting for the physicians, a meeting of the nurses' association, or a party for hospital employees. Extra planning and food preparation are required for these functions, and working hours are involved which must enter into any calculation of a dietitian ratio.

The Work-Time Unit. A hospital operates 24 hr. a day, seven days a week. During most of this time, dietary staff will be on duty. The time required for supervision by professional dietitians varies during the day and during the week. The number of work units involved and the number of meal periods requiring professional supervision will affect the number of dietitians required.

The hospital's policies regarding the number of hours worked per week and the straight or split shift are also factors in staffing. It is obvious that more dietitians will be required if a 40-hr. week is established rather than a 44- or 48-hr. week. It is also a matter of some consequence in determining dietitian-patient ratios whether or not dietitians work a split shift. Also, the longer the vacation granted to the dietitian, the greater will be the work-hours and work-weeks to be made up by other dietitians.

Hospital Design. The layout of the hospital is an important factor in staffing a dietary department. In a hospital designed for effective food service from one central kitchen, fewer dietitians are required for effective supervision. When more than one kitchen exists, the distance between kitchens is a factor to be considered. Decentralized facilities call for a larger staff. The needs in each hospital will determine the type of service best suited for a satisfactory service. A layout that provides for efficient work units with the required equipment and supplies close at hand for each worker and a minimum of cross traffic and direct routes from storage to preparation to service will facilitate management and may decrease the need for professional supervision. Inefficient arrangements often make a larger staff mandatory.

Delegation of Duties. Administrative procedures vary. The head of a dietary department may delegate some administrative responsibilities, such as cost accounting, purchasing, management of stores, employment of personnel, and other details. Such delegation is successful only if the dietitian sets the standards and maintains general supervision of these activities. Administrative policy-making remains with the dietitian. Fewer dietitians will be needed if this type of organization is followed than if all administrative functions are carried on by professionally trained dietitians.

Education. A dietitian will undoubtedly be called on to assist in the education of student nurses, in the training of medical interns, residents, and staff, and in providing supervisory training for employees in her own department. Such assistance may take the form of formal classes, demonstrations, or on-the-job supervision and consultation. Individual or class instruction of clinic and in-patients is required of the dietitian in varying degrees. Where an extensive educational program is undertaken, extra working time must be provided which may amount to the full-time service of one or more dietitians. Education is a responsibility of the dietitian in the hospital, and must be considered in the dietitian: patient ratio.

Research. Research is undertaken by hospitals in varying degrees. A research unit may require the services of one or more dietitians, but even where this unit does not exist, a certain number of dietitian working hours may be devoted to research. The application of newer methods of feeding should be one of the important interests of the dietitian.

If a dietitian is to be alert to trends in feeding practices, time should also be allotted for reading the dietetic literature, attendance at lectures, conferences, ward rounds, scientific meetings, and for the preparation of an occasional contribution to the scientific literature.

Conferences. Every well organized hospital operating on the teamwork principle holds conferences for various purposes. The dietary department should be represented at both clinical and administrative conferences, and time for both attendance and participation should be scheduled.

In working out a ratio of dietitians to patients, the above eleven factors must be considered. There are, in addition, many other specific factors affecting the ratio that apply to mental hospitals, geriatric hospitals, and certain types of specialized institutions. These cannot be considered in a general statement as they are not generally applicable to all hospitals. All this only adds up to the conclusion reached originally by MacEachern and Morrill that "*no general rule can be so formulated as to be safely applied to any individual hospital.*" Each hospital must work out its own ratio based on all the variables of standards and services involved.

REPORT OF THE NOMINATING COMMITTEE, THE AMERICAN DIETETIC ASSOCIATION, 1951-52[1]

The Nominating Committee of The American Dietetic Association—Katharine W. Harris, Maniza Moore, Elmira Blecha, Henrietta Becker, and Helen E. Walsh, Chairman—presents the following ballot for 1952–53:

PRESIDENT-ELECT

Grace Bulman: Diploma, Drexel Institute: B. S., Columbia University

Positions held:

- U. S. Army Hospital Dietitian, World War I
- U. S. Public Health Hospital Dietitian
- U. S. Veterans Hospital Dietitian
- Chief, Dietetic Section, Medical Division, U. S. Veterans Bureau, Washington, D. C.
- Present position—Chief, Dietetic Division, Department of Medicine and Surgery, Veterans Administration, Washington, D. C.

Professional activities:

- Vice-President, A.D.A.
- Chairman, Food Administration Section, A.D.A.
- Member—Program Planning Committee (Chairman), Committee on History of Nutrition and Dietetics, A.D.A.
- President, District of Columbia Dietetic Assn.
- Treasurer, District of Columbia Dietetic Assn.
- Liaison Representative for Veterans Administration to the Food and Nutrition Board, National Research Council

SPEAKER-ELECT OF THE HOUSE OF DELEGATES

Ercel S. Eppright: B.S., University of Missouri; M.S., University of Texas; Ph.D., Yale University

Positions held:

- Instructor, Foods and Nutrition, University of Texas
- Director, Department of Home Economics, Texas State College for Women
- Present position—Head, Department of Foods and Nutrition, Iowa State College

Professional activities:

- Chairman, Professional Education Section, A.D.A.

[1] Other nominations may be made by nominating petitions signed by not less than 400 members of the Association, of whom not more than 30 shall be from any one state, assented to in writing by the person or persons named thereon as nominees, and filed with the Secretary at the office of the Association on or before April 15, 1952.

A.D.A. Representative, Midcentury White House Conference on Children and Youth
Member: Internship Board (Chairman), Committee on Dietary Study Methods, A.D.A.
President, Texas Home Economics Assn.
Chairman and Secretary, Foods and Nutrition Division, American Home Economics Assn.
Chairman, Texas State Nutrition Committee
Vice-Chairman, Iowa State Nutrition Committee
Publications:
Papers in this and other professional publications

E. Neige Todhunter: B.S., M.S., University of New Zealand; Ph.D., Columbia University
Positions held:
High school teacher, New Zealand
Associate Professor of Nutrition, School of Home Economics; and Research Worker, Agricultural Experiment Station, State College of Washington
Present position—Director, Research Laboratory of Human Nutrition, and Professor and Head, Department of Foods and Nutrition, School of Home Economics, University of Alabama
Professional activities:
Member, Coordinating Cabinet, A.D.A.
Member, House of Delegates, A.D.A.
Member, Council of the House of Delegates, A.D.A.
Member: JOURNAL Board (Chairman); Investigation Board; Membership Committee; Scholarship Committee; Nominating Committee; History of Nutrition and Dietetics Committee (Chairman); Academic Requirements Committee (Chairman), A.D.A.
A.D.A. Representative on A.A.A.S. Council
A.D.A. Representative on Joint American Home Economics Assn.—School Food Service Assn.—A.D.A. Committee
Councillor, American Institute of Nutrition
Member, Advisory Committee, Dietetic Division, Veterans Administration; Advisory Committee on Research in Food and Nutrition, U. S. D. A.
Chairman, Research Committee, Foods and Nutrition Division; Chairman, Colleges and Universities Department, American Home Economics Assn.
Publications:
About forty research papers and scientific articles in this and other professional publications
Popular articles in business publications
Author of various booklets on nutrition

SECRETARY

Esther A. Atkinson: B.S., University of Nebraska; M.S., Kansas State College
Positions held:
Director of Home Economics and Food Service, College Residence Hall, McPherson College
Instructor in Institutional Management, University of Idaho
Food Supervisor, Army Mess Unit, and Instructor in Quantity Cookery, Kansas State College
Present position—Associate Professor and Head, Department of Hotel and Institution Management, Pennsylvania State College
Professional activities:
Member, House of Delegates, A.D.A.
Member: Membership Committee: Committee on Revision of Experience Forms for Evaluation of Experience in Lieu of Internship for A.D.A. Membership (Chairman); Committee on International Relations among Dietitians (Chairman), A.D.A.
President, Pennsylvania Dietetic Assn.
Chairman, Institution Administration Division, American Home Economics Assn.
Chairman, Omicron Nu

A. June Bricker: B. S., Battle Creek College; graduate study, New York University
Positions held:
Assistant Therapeutic Dietitian, University of Michigan Hospital
Assistant Dietitian and Director of Residence, Connecticut College
Community Nutritionist, Council of Social Agencies, Manchester, N. H.
Nutrition Director, Connecticut Dairy and Food Council, Hartford
Present position—Director, Home Economics Bureau, Health and Welfare Division, Metropolitan Life Insurance Company, New York City
Professional activities:
Delegate-at-Large, A.D.A.
Member, House of Delegates, A.D.A.
Chairman, Community Nutrition Section Project, A.D.A.
Vice-President, Connecticut Dietetic Assn.
Secretary, New York State Dietetic Assn.

DELEGATES-AT-LARGE

Lillian Storms Coover: B.S., Iowa State College; M.S., Teachers College, Columbia University; Ph.D., Columbia University
Positions held:
Instructor, Department of Chemistry, Iowa State College
Assistant Professor, Home Science Department, University of Otago, Dunedin, New Zealand
Nutritionist in Charge of Research, Gerber Products Company, Fremont, Mich.
Present position—home maker and Nutrition Consultant, Gerber Products Company
Professional activities:
President, A.D.A.
Vice-President, A.D.A.
Secretary and Chairman, Membership Committee, A.D.A.
Chairman, Community Education Section, A.D.A.
Member: Nominating Committee (Chairman), Program Planning Committee (Chairman), Investigation Board, Membership Committee, Reorganization and Constitution Committee, A.D.A.
President, Michigan Dietetic Assn.
Publications:
Papers in this and other professional publications

Fern W. Gleiser: B.S., University of Washington; M.S., Teachers College, Columbia University
Positions held:
Instructor in Institution Administration, Teachers College, Columbia University
Assistant Professor of Institution Administration, Drexel Institute
Professor and Head, Department of Institution Management, Iowa State College
Present position: Professor of Institution Economics and Management, University of Chicago
Professional activities:
Speaker, House of Delegates, A.D.A.
Treasurer and Chairman, Finance Committee, A.D.A.
Member, House of Delegates, A.D.A.
Member: Finance Committee, Nominating Committee, Administrative Approval Committee, and Special Committee on Socio-Economic Status of the Dietitian, A.D.A.

President, Iowa Dietetic Assn.
Vice-President, Illinois Dietetic Assn.
Publications:
Articles in this JOURNAL and other magazines

Gladys E. Hall: B.S., M.A., Indiana University
Positions held:
Administrative Dietitian, Indiana University Medical Center, Indianapolis
Director, Dietetic Department, St. Louis University Hospitals
Educational Director, The American Dietetic Association
Executive Secretary, The American Dietetic Association
Present position—Associate Professor, Department of Hotel and Restaurant Management, Florida State University
Professional activities:
Chairman, Professional Education Section, A.D.A.
Program Chairman, A.D.A.
President, Indiana Dietetic Assn.
President, Missouri Dietetic Assn.
Secretary, Florida Dietetic Assn.

Maniza Moore: A.B., Mississippi State College for Women; graduate study, University of Colorado, University of Wisconsin, and George Peabody College
Positions held:
Chief Dietitian, St. Luke's Hospital, Jacksonville, Fla.
Chief Dietitian, Grace Hospital, New Haven
Chief Dietitian, Beth Israel Hospital, Boston
Director of Dietetics, Vanderbilt University Hospital
Present position—Dietetic Representative, Veterans Administration Area Medical Office, Atlanta
Professional activities:
President and Chairman, House of Delegates, A.D.A.
Convention Chairman, A.D.A.
Chairman, Food Administration Section, A.D.A.
Member, Nominating Committee, A.D.A.
President, Massachusetts Dietetic Assn.
President, Tennessee Dietetic Assn.

NOMINATING COMMITTEE

The following candidates (five of whom are to be elected) for the Nominating Committee for 1952–53, have been selected as representatives of five geographic areas determined on the basis of distribution of the membership. Members are to vote for one person from each geographic area.

Geographic Area I[2]

Helen Baughman: B.S., Margaret Morrison Carnegie College; graduate study, The Johns Hopkins University; M.S., Teachers College, Columbia University
Positions held:
Assistant Dietitian, The Johns Hopkins Hospital
Present position—Director, Department of Nutrition, Peter Bent Brigham Hospital, Boston, and Instructor in Nutrition, Harvard School of Public Health
Professional activities:
Member, House of Delegates, A.D.A.
President, Maryland Dietetic Assn.
Chairman, Professional Education Section, Massachusetts Dietetic Assn.
Chairman, Public Relations Committee, Massachusetts Dietetic Assn.

E. Alliene Mosso: B.S., Cornell University; M.A., Teachers College, Columbia University
Positions held:
Dietitian, Lincoln Hospital, New York City
Teaching Dietitian, St. Luke's Hospital, New York City
Present position—Director of Dietetics, St. Luke's Hospital, New York City, and Instructor in Food Service and Dietary-Hospital Administration, Columbia University School of Public Health
Professional activities:
Member, Committee to Review and Revise Application Forms for an Approved Dietetic Internship, A.D.A.
President, New York State Dietetic Assn.
Vice-President, New York State Dietetic Assn.
Chairman, Public Relations Committee, New York State Dietetic Assn.
President, Greater New York Dietetic Assn.

Geographic Area II[3]

Anna M. Tracy: Ph.B., University of Chicago
Positions held:
Administrative Dietitian, Glen Springs Sanitarium, Watkins Glen, N. Y.
Teacher of Home Economics, Martha Washington Seminary
Present position—Dietitian and Professor, Florida State University, Tallahassee
Professional activities:
President, A.D.A.
Chairman, Food Administration Section, A.D.A.
Member, Public Relations Committee, Academic Requirements Committee, A.D.A.
President, Florida Dietetic Assn.

Vera W. Walker: B.S., M.S., Florida State University; additional graduate study, University of Chicago
Positions held:
Nutritionist, Bureau of Maternal and Child Health, State Board of Health, Jacksonville, Fla.
Present position—Consultant on Standards of Assistance, State Department of Public Welfare, Jacksonville
Professional activities:
Chairman, Diet Therapy Section Projects, A.D.A.
President, Florida Dietetic Assn.

Geographic Area III[4]

Virginia Harger: B.S., Washington State College; M.S., Kansas State College
Positions held:
Dietitian, University of Nevada
Instructor, School of Home Economics, Ohio University
Assistant Professor, Department of Nutrition, Stanford University
Medical Department Dietitian, A.U.S.—Birmingham General Hospital, Van Nuys, Calif.
Assistant to the Executive Secretary, The American Dietetic Association
Present position—Assistant Professor of Institution Management, The Ohio State University

[2] Geographic Area I: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, and Pennsylvania.

[3] Geographic Area II: New Jersey, Delaware, Maryland, Washington, D. C., Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, West Virginia, Tennessee, Kentucky, Arkansas, and Louisiana.

[4] Geographic Area III: Michigan, Ohio, Indiana, and Illinois.

Professional activities:
President-Elect, Ohio Dietetic Assn.
Vice-President, Ohio Dietetic Assn.
President, The Columbus Dietetic Assn.

Wilma F. Robinson: B.S., University of Kentucky
Positions held:
Therapeutic Dietitian and Chief Dietitian, Christ Hospital, Cincinnati
Chief Dietitian, Mount Auburn Hospital, Cambridge, Mass.
Present position—Consultant Dietitian, Illinois Department of Public Health, Springfield
Professional activities:
Member, House of Delegates, A.D.A.
Member, American Hospital Assn.—A.D.A. Joint Committee
Member, Internship Board, Community Nutrition Section Project Committees, A.D.A.
President, Ohio Dietetic Assn.
President, Illinois Dietetic Assn.
President, Cincinnati Dietetic Assn.

Geographic Area IV[5]

Winifred Howard Erickson: Diploma, The Stout Institute; B.S., University of Minnesota
Positions held:
Head Dietitian, Eitel Hospital, Minneapolis
Chief Dietitian, Veterans Administration Hospital, St. Paul
Instructor, College of St. Catherine
Present position—Director of Dietetics, Ancker Hospital, St. Paul
Professional activities:
Treasurer and Chairman, Finance Committee, A.D.A.
Chairman, Convention Committee, A.D.A.
Member, House of Delegates, A.D.A.
Member, Finance Committee, A.D.A.
President, Minnesota Dietetic Assn.
Chairman, Minnesota State Nutrition Council
Chairman, Committee on Dietetics, Governor's Advisory Council on Mental Health (Minn.)
Publications:
Articles in hospital magazines

Frances Welch: B.S., North Texas State Teachers College; M.A., Texas State College for Women
Positions held:
Manager, School Lunchroom, Dallas
Assistant Professor in Home Economics, North Texas State College
Present position—Director of School Lunchrooms, Dallas
Professional activities:
Delegate-at-Large, A.D.A.
Member, House of Delegates, A.D.A.
President, Texas Dietetic Assn.
Publications:
Papers in this JOURNAL and other magazines

Geographic Area V[6]

Louise Esch: B.S., University of Oklahoma
Positions held:
Dietitian, University of Michigan Hospital
Administrative Dietitian, Saint Marys Hospital, Rochester, Minn.
Present position—Director of Dietetics and Assistant Superintendent, Stanford University Hospitals, San Francisco
Professional activities:
Member, House of Delegates, A.D.A.
Secretary, House of Delegates, A.D.A.
Member, Coordinating Cabinet, A.D.A.
Vice-President, California Dietetic Assn.

Mary W. Northrop: A.B., Vassar College; M.S., Teachers College, Columbia University
Positions held:
Dietitian, Muncie (Ind.) Home Hospital
Chief Dietitian, Montefiore Hospital, New York City
Present position—Chief Dietitian and Housekeeper, King County Hospital System, Seattle
Professional activities:
Secretary and Chairman, Membership Committee, A.D.A.
Chairman, Council of the House of Delegates, A.D.A.
Member, House of Delegates, A.D.A.
Chairman, Professional Education and Food Administration Section Projects, A.D.A.
President, Washington State Dietetic Assn.
Publications:
Articles in this JOURNAL and other magazines

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[5] Geographic Area IV: Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas.

[6] Geographic Area V: Hawaii, Washington, Oregon, California, New Mexico, Arizona, Idaho, Utah, Nevada, Montana, Wyoming, and Colorado.

Hospital Dietary Committees

"Every hospital should have an actively functioning dietary committee." Donald G. Smelzer, M.D., Executive Director, Hospital Planning Agency, Philadelphia, made this suggestion at the 33rd Annual Meeting of The American Dietetic Association in Washington.

"This committee should consist of adequate, responsible medical staff representation, preferably the chiefs of the medical, surgical, and pediatric service; the dietitian; and a representative of the nursing department. The dietitian should be made to feel that she is an equal member of the committee, and she should, at the same time, realize that she must attend the meetings prepared to give and take constructive criticism and expect to learn. The presence of the nursing representative will undoubtedly help to smooth out many of the rough spots that are bound to occur between the dietary and nursing departments. The administrator of the hospital should also attend meetings of this committee. It might be helpful to invite a representative of the resident and intern staffs to attend meetings occasionally. Such a dietary committee has proved to be mutually helpful—helpful to the dietitian who will appreciate even more what the physician is attempting to accomplish and helpful to the physician because he will appreciate more and more the potential responsibilities of the dietitian and her contribution to the over-all care of the patient."

Current Comment

Choosing Tableware for a New Hospital

1. THE ADMINISTRATOR'S CONSIDERATIONS

J. MILO ANDERSON

Administrator, The Ohio State University Hospital, Columbus

In planning and equipping a new hospital many decisions require conference and cooperation between the hospital administrator and the dietitian.

One of the decisions which had to be made in the furnishing and equipping of our new hospital was the selection of tableware. In anticipation of this decision, our Dietary Department ran a series of tests under controlled conditions of both china and plastic tableware. These tests covered a period of more than a year. Economics, sanitation, and patients' preferences were considered. This portion of the discussion will deal with those economic factors important to the administrator.

Problems which require cooperative planning by hospital administrators and their dietitians are frequent occurrences in any general hospital organization. The planning and equipping of a new hospital provides many examples of the need for both to contribute information and to accept decisions based on different viewpoints.

The accompanying papers were presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland in October as an example of such cooperative thinking on the part of the hospital administrator and the dietitian.

There is a rapidly growing amount of information regarding the advantages and disadvantages of both china and plastic tableware. The Vitrified China Association has done much work in this field, with results indicating that plasticware is much less desirable than china. The plastic industry has an equal amount of research and study to demonstrate that plasticware is far superior to china. Both sources produce some very good reasons for their conclusions. A number of hospitals, restaurants, and other institutions have experimented with plastic tableware. Some have found it very satisfactory—some have not used it long enough to come to conclusions. Others have not found it satisfactory.

INSTALLATION AND REPLACEMENT COSTS

The first economic factor in our situation to be considered was the original cost of plastic as compared with chinaware. Here we found that, although most plastic companies sell their products at about the same price, the cost of china varies from far below the cost of plastic to much above. The cost of the china dishes we were using was higher than the cost of the plasticware we were considering.

Another factor was the replacement cost. We equipped one 40-bed serving pantry completely with plasticware and kept careful account of replacements for a period of thirteen months, from February 1950 through February 1951. We also kept track of replacement costs of a floor pantry of the same size, using chinaware, during the same period. We found the cost of plastic was considerably lower than that of china, as shown in Table 1.

The total replacement cost for thirteen months for the floor pantry using chinaware was $289.09, while the cost of replacing plastic dishes for all reasons was $106.40. We had no way of knowing how many dishes in either station were replaced because they were lost or stolen but assumed this factor to be about equal in both cases.

MARRING

Another factor to be considered was the staining of the plastic dishes. Much has been said and written to the effect that plasticware is more easily stained than chinaware. This we found to be true, particularly in coffee cups. However, we found also that with proper washing, the stains were easily removed.

Another economic factor to consider was the surface hardness or resistance to scratching. So far as we know, no plasticware has as hard a surface as good china; therefore, plasticware will scratch more easily. However, at the end of the thirteen-month study, the plasticware was not unsightly nor did bacterial counts show it to be less sanitary than chinaware. Then, too, if at the end of our year's study it had been necessary to replace the entire stock of plasticware in the floor kitchen where we were testing it, this could have been done at less cost than the savings which resulted from fewer replacements. We could have replaced the entire stock at the end of that study and still been money ahead. This, however, was not necessary.

Another economic factor which we considered was that of weight. Plasticware is much lighter than china, and we believe it creates much less fatigue on the part of the diet maids who must handle it. Our workers preferred the plasticware.

EFFECT OF HEAT

In one economic area our experience has not been enough to report completely. Tests show that comparatively short exposure to extremely high temperatures causes rapid deterioration. Plastic tableware ordinarily should not be autoclaved. Some tests also show that long exposure to relatively low tempera-

TABLE 1

Replacements of tableware during a thirteen-month period in a pantry using china dishes and in a pantry equipped with plasticware

DISHES	REPLACEMENTS			
	China		Plastic	
	Number	Cost	Number	Cost
Cups	152	$81.06	53	$29.81
Saucers	104	33.80	26	11.38
Plates	70	40.25	40	30.00
Salad plates	120	39.00	28	7.23
Dessert dishes	132	41.25	45	14.44
Cereal dishes	114	53.73	26	13.54
Total cost for 13 months		$289.09		$106.40

tures causes depreciation in plasticware. In our thirteen-month tests, we did not keep our dishes in heated cabinets. However, since June 15, 1951, we have been using plastic tableware stored in heated cabinets. This, however, is not a long enough period in which to determine whether long exposure to these temperatures will damage it.

In summary, as the administrator views the economics involved, we found the following results: The original cost of plastic tableware may not be significantly different from the cost of good quality chinaware. Plasticware required more careful attention to eliminate staining and was not as scratch-resistant as china. Including replacements made because of staining and scratching, the replacement cost of plasticware was less than half that of the chinaware.

Sanitization and patients' acceptance, two other factors important to both administrators and dietitians, are presented in the paper which follows.

2. THE DIETITIAN'S CONTRIBUTION

MARTHA NELSON LEWIS

Director, Dietary Department,
The Ohio State University
Hospital, Columbus

About three years ago, when it became evident that we were building a new 600-bed hospital, it was necessary to make a number of decisions concerning many types of equipment and furnishings. One of our administrators had become interested in the possibility of saving money by using plastic dishes. We had always used china tableware and had personal prejudices against plastic and paper dishes. We felt sure no one could ever convince us that plasticware would be as desirable as china for our food service.

However, since we are an educational institution and always interested in research, we decided to make a number of controlled studies in which we would compare some of the factors important to us. The economic aspect of those studies was reported by Mr. Anderson. The use of the plastic tableware resulted in such a monetary savings that we realized we would have to find evidence of inadequacy in some other area or our purchasing agent would surely try to influence us in choosing plasticware for the new hospital.

SANITIZATION

We had noted that the plastic dishes did not air-dry as did china after our usual dishwashing procedures. Since we did not towel-dry any of our dishes, the plastic dishes were being stored on the shelves wet. It seemed reasonable to expect that this moisture in the warm cupboard might mean increased bacterial growth.

To see if this were true, we set up a study using china in two areas and plasticware in two other areas. Two different detergents were used.

We have now accumulated several hundred bacterial counts, made in the usual manner prescribed by the U. S. Public Health Service. These counts were taken by a trained bacteriologist, counted in the bacteriology laboratory, and the bacteriologist was unaware of the prejudice we entertained or of the variables we had introduced.

To our amazement, the counts taken from the plastic dishes were consistently as good or better than those from china. The dishwashing procedure appeared to be adequate, for the damp plastic dishes stored in the warm cupboard evidenced no increase in bacterial growth. Throughout the study, there was no evidence to indicate any superiority of china over plastic tableware with regard to ease of sanitization.

OTHER FACTORS

Another test had to do with the temperature of the foods served in and on plastic. As you know, the plastics do not absorb heat; thus coffee was being served in cups at room temperature, and plates and dishes were not preheated as were the china dishes. We were surprised to find that both liquids and solids retained their heat in the plasticware better than in the china.

In our hospital we wash all the dishes for a floor in the pantry on that floor. The noise of dish handling and dishwashing can be very disturbing. The use of plastic tableware has cut down this noise and clatter appreciably. We feel that this is very important, since serving pantries are close to patients' rooms.

The pantry maids also like the lighter weight of the dishes for setting up and carrying trays and for putting the dishes through the dishwashing machines.

PATIENTS' PREFERENCES

Since none of the experiments had resulted in evidence against the plastic dishes, we then decided to

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see if our patients entertained any prejudices against them. Dietetic interns visited patients to obtain their comments. Several individuals made surveys at different times. We visited private and clinical patients, a few a day, for days, and never did we find a patient who stated that he preferred china.

It should be mentioned here that this study was done in Columbus, Ohio. Our private patients are largely professional people and business men and women. We do not entertain royalty or multimillionaires. We have no people who pay $25 to $50 a day for hospital rooms. Such patients might feel differently about their tableware than did our $10- to $15-a-room patients.

Tests for the adequacy of plasticware dishes need not and cannot be the same as those set up for china. No doubt many more tests will reveal valuable information. We are continuing our critical examination and will not relax our vigilance until we have adequately considered all factors as well as the element of time.

This material is not presented with the objective of proving one type of tableware better than another but rather as an example of how the accumulation of facts and exchange of data enable hospital administrators and their dietitians to solve common problems.

The Brazilian Diet

The following are excerpts about the Brazilian diet taken from a letter by Madame A. Garcia de Miranda of Rio de Janeiro addressed to S. Flavell Taillon of Ottawa, Canada.

Brazilians love good food, and Brazilian cooking is tasty, but not rich or highly seasoned. In the northern part of the country many of the dishes reflect the influence of Africa. These are inclined to be heavier, richer, and perhaps more delicious than those of Indian origin, also found throughout the nation.

In the south of Brazil, meat is a basic part of the diet; in the central area, countless varieties of vegetables and fruits are included; in the north and northeast, fish and sea food, cooked in olive oil, are important foods.

Fruits in season are used in their own regions, being cooked with sugar until they form a paste thick enough to be cut and served with a dry, salty cheese made in the state of Minas Geraes. This cheese, incidentally, is used with almost all hot dishes, desserts, and fruits.

In Brazil, fruit is never served in private homes for breakfast, although the rich and poor alike have coffee, milk, and bread and butter with perhaps jam.

Rice, black beans, and mandioca flour are served for lunch and in some homes also for dinner. The rice is cooked by a method used by the Latin people in South America and Europe. It is first washed until the water is transparent, then fried in a small amount of shortening with thin slices of onion, after which it is salted and covered with boiling water and cooked slowly. When almost dry, a piece of absorbent paper is placed under the cover of the pan to take up the moisture. The resulting rice is fluffy and loose, and it may be served plain or with cheese, chicken, or mushrooms.

Black beans, although almost a staple, may be replaced in the central and southern part of Brazil with one of the many varieties of brown beans. In the state of Rio Grande do Sul, the beans are cooked with pork or ox meat dried in a special way.

There are two kinds of mandioca roots. The cultivated variety is used as a vegetable, while the wild root is used for flour which looks like the Canadian wheat flour called "heart of wheat," except that the grains are smaller. Mandioca flour is boiled, seasoned, and served with fish dishes. When fried in pork fat, it is used with roasts and as a stuffing for fowl. It is also served raw over beans or any other food, or it can be baked into plain cakes. Because of its wide usage, studies are now being conducted to determine the nutritive value of mandioca flour.

Brazilian ladies love to make tiny biscuits of arrowroot, wheat, corn maizene, and the many varieties of flour found in the different regions of the country. Biscuits are also made commercially and served in the English manner. Little pies similar to Chinese rolls are prepared using cheese, sea food, or palmito (the vegetable of the palm tree).

Although coffee is served many times a day, and men sit in cafes discussing business over coffee, the national beverage is yerba mate, which is also popular in Argentina, Uruguay, Chile, and other countries in South America. It is a brewed beverage made from a plant which originally came from Paraguay, and has a bitter, aromatic flavor. Perhaps the most indigenous beverage is the national liquor, called *caninha* or *cachaca*, somewhat like a rum or brandy, which is made of sugar cane and is taken as an aperitif.

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Current Literature

Contributed by Mildred Bonnell and administrative interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Elva Hiscock, Veterans Administration Hospital, West Los Angeles; Pauline Kegereis, The Children's Mercy Hospital, Kansas City, Missouri; Berdena Rosenow, University of Kansas Medical Center, Kansas City, Kansas; and the Journal staff

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 18, December, 1951

* Diabetes mellitus and concomitant leukemia. J. T. Paul, W. R. Best, and L. R. Limarzi.—p. 349.
* Achylia gastrica: keystone in the development and eradication of macrocytic achylic anemia. F. S. Weinberg.—p. 351.
* Effect of a lysozyme inactivating anion exchange polymer in treatment of peptic ulcer: experimental and clinical study. I. J. Greenblatt, M. Jacobi, and J. H. Cohen.—p. 362.

Diabetes and Leukemia. The association of diabetes mellitus and leukemia in the same patient is infrequent. Ten cases of coexistence of the two diseases are reported. This group is part of a series of 805 cases of leukemia studied. The diabetic state did not seem to affect the course of leukemia. Two patients survived for two years after the diagnosis of leukemia was made, and three patients were known to be alive one year later.

Achylia Gastrica. Achylia gastrica is complete absence of gastric juice, primary and constitutional, whereas achlorhydria is lack of free hydrochloric acid, a symptom found secondarily in many diseases. Achylia gastrica leads to pernicious anemia. It can be diagnosed by the Boas-Ewald test meal which will show absolute lack of gastric juice, disturbance of chymification, and disturbance of motility. Achylia gastrica is unchangeable, and its development has never been observed. Achylia gastrica has been detected in infants and children, especially if one parent has pernicious anemia. There is a familial occurrence of achylia gastrica. Blood examinations of patients with achylia gastrica have permitted the diagnosis of latent or early pernicious anemia.

Anion Exchange Polymer in Peptic Ulcer. In twenty-six of thirty patients with peptic ulcer, Deacidite, an iron exchange polymer, was found to be effective in eliminating night pain. This effect was obtained without resorting to dietary restriction except for the elimination of seasoned food and alcohol. No complications, such as constipation or disturbances in acid or base balance, occurred though the polymer was taken over a period of approximately one year. *In vitro* experiments demonstrated that Deacidite is a powerful and rapid deacidifying agent, with a minimal acid rebound effect. It inactivates lysozyme. Its apparent pepsin inactivating effect is based on its ability to remove hydrochloric acid.

AMERICAN JOURNAL OF MEDICINE

Vol. 11, December, 1951

* Diet and lipotropic agents in arteriosclerosis. J. D. Davidson.—p. 736.

Diet and Lipids in Arteriosclerosis. Under certain circumstances, low-cholesterol, low-fat diets can lower the levels of serum cholesterol. The degree of dietary lipid restriction needed to achieve this effect in some patients may preclude use of this regimen. It is not established that the maximum depression of serum cholesterol level obtainable by dietary measures will affect arteriosclerosis in man. Evidence in the experimental animal, however, suggests that a restricted lipid intake produces regression of experimentally induced arteriosclerotic lesions. Consideration of all data available indicates that despite individual positive reports, there is no general agreement that choline or inositol have any specific influence upon arteriosclerosis or the serum cholesterol in man or the experimental animal.

THE AMERICAN JOURNAL OF NURSING

Vol. 51, December, 1951

* Dynamics in group discussion.—p. 716.

Vol. 52, January, 1952

* New ways to study nutrition. K. V. Betzold and G. Elfert.—p. 78.

Dynamics in Group Dicsussion. A committee in the School of Nursing Education at Catholic University made a study of group dynamics. As a result, a small booklet was developed offering concise information about the process of group thinking. Excerpts from this booklet (unpublished) are reproduced and a bibliography on the subject is included.

Teaching Student Nurses Nutrition. Unless nutrition is taught as a vital part of nursing care, student nurses will neither be interested nor use their knowledge effectively. The Johns Hopkins Hospital School of Nursing has substituted an integrated program of nursing and nutrition for their former isolated diet therapy assignment. The new program, now in effect six years, has eliminated the need for a laboratory course in cookery for students who can prepare a satisfactory meal (90 per cent of students have qualified for exemption). Nutrition is discussed in a patient-centered seminar, and in group nutrition conferences its part in the patient's total care is stressed.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 42, January, 1952

Q fever studies. XII. Certain observations on the relationships between serologic tests for brucellosis, syphilis, and Q fever. E. H. Lennette, W. H. Clark, and F. W. Jensen.—p. 12.

Choice of fluoridating agents in the control of dental caries. C. L. Howell, L. E. Burney, H. G. Day, and J. C. Muhler.—p. 44.

BRITISH MEDICAL JOURNAL

No. 4744, December 5, 1951

* Anemia of pregnancy among Africans in Nigeria. A. W. Woodruff.—p. 1415.

Anemia of Pregnancy among Africans. Anemia in pregnancy in Nigeria is often encountered among those living on a protein-deficient diet. There is a marked tendency for labor to be premature in these cases, and the neonatal mortality is high. The anemia is characterized by an increase in the diameter of the red blood cells and diminution in their thickness. A hemolytic tendency is common. The patients frequently have enlarged livers and spleens. The total plasma proteins are normal although the globulin is usually increased. Liver biopsy has shown the liver to be diffusely fibrosed in many cases and infiltrated with fat in others. Biochemical tests reveal an impairment of liver function. The anemia tends to become severe in the last three months of pregnancy and to remit spontaneously after parturition. It is usually refractory to treatment before birth. The most useful therapeutic measures, however, are a high-protein diet and blood transfusions. In pregnant women in the tropics, a vicious circle may be established by the demands of the fetus for protein aggravating the effects of dietary protein deficiency and liver damage due to protein deficiency.

ENDOCRINOLOGY

Vol. 49, November, 1951

* The effect of epinephrine and insulin on the plasma potassium level. A. Dury.—p. 663.

Plasma Potassium. A significant fall in the mean level of plasma potassium occurred 60 min. after injection of 0.02 mg. per 100 gm. epinephrine. A dose of 0.5 unit insulin induced a similar effect in normal intact rats 60 min. after injection, but did not affect the plasma potassium in a group of adrenalectomized or adrenal enucleated rats. Evidence is presented that epinephrine as

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such should be considered to have an integral role in potassium homeostasis which does not involve the anterior pituitary adrenocortical axis.

FOOD RESEARCH

Vol. 16, November–December, 1951

Bacillus as spoilage organisms in canned foods. E. Jansen and V. Aschehoug.—p. 457.

* Effect of frozen storage and subsequent cooking on the thiamine, riboflavin, and nicotinic acid content of pork chops. W. P. Lehrer, Jr., A. C. Wiese, W. R. Harvey, and P. R. Moore.—p. 485.

Factors influencing the stability of thiamine during heat sterilization. G. H. Bendix, D. G. Heberlein, L. R. Ptak, and L. E. Clifcorn.—p. 494.

* Diketogulonic acid, dehydroascorbic acid, and ascorbic acid content of four fruits. S. D. Chen and C. Schuck.—p. 507.

B Vitamins, Storage, and Pork. Pork chops from the loins of six hogs were subjected to eighteen different treatments, and the thiamine, riboflavin, and niacin content were determined. After freezer storage at various temperatures and for various lengths of time, the chops were cooked: some in the thawed, some in the frozen state. The six loins from which the chops were cut differed significantly in thiamine content, but not in the other two vitamins. Some chops lost more in all three vitamins during the process than others. Cooking while the chops were still frozen saved 19 per cent of the thiamine and 14 per cent of the riboflavin, but no difference in niacin loss was noted. Six months' frozen storage resulted in a loss of 40 per cent of the original thiamine and 31 per cent of the original riboflavin. No niacin loss occurred. Loins at various storage temperatures fared about the same if stored the same length of time.

Assay of Four Fruits. Four varieties of cantaloupe and samples of grapefruit, pineapple, and strawberries were analyzed for diketogulonic acid, dehydroascorbic acid, and ascorbic acid, and results are given. The authors feel that the ascorbic acid content of fruits and vegetables, based on late methods of analysis, should be re-evaluated, since most published figures give a measure of ascorbic acid only, ignoring the other two acids.

THE INDIAN JOURNAL OF MEDICAL RESEARCH

Vol. 39, January, 1951

* The effects of egg-yolk supplementation to the poor rice diet of South India on the growth of rats. Part I. Fat-extracted egg-yolk. Part II. Egg-yolk extract. R. P. Devadas and T. S. Sutton.—p. 51 and p. 59.

* Studies on the biosynthesis of B-vitamins. Part I. Investigation of the site and mechanism of biosynthesis of nicotinic acid in albino rats on diets containing different amino acids and free from nitrogen. H. N. De and P. Datta, Jr.—p. 63.

* Studies on the biosynthesis of B-vitamins. Part II. Effect of different carbohydrates on the biosynthesis of riboflavin in albino rats. Part III. Effect of protein levels on the biosynthesis of riboflavin in albino rats. H. N. De and J. K. Roy.—p. 73 and p. 83.

Effect of Egg-Yolk Supplement to Poor Rice Diet. The growth of young albino rats on a basal rice diet, the "poor rice diet of South India," was negligible, but the rats receiving supplementation of fresh egg-yolk showed striking increases in weight gains. Supplementations of crude casein, vitamin A, and riboflavin to a diet already supplemented with fresh egg-yolk were not effective in producing further weight gains. The animals receiving just the basal rice diet, however, benefited from such supplementations. Exhaustive removal of fat from the egg-yolk by extractions with ether, acetone, and alcohol produced a corresponding diminution in the nutritive value of egg-yolk. Vitamin A by itself and in the presence of riboflavin seemed to correct most of the deficiency thus caused.

Egg-yolk extract supplementation of the basal rice diet which had been made adequate in protein with vitamin-free casein and lactalbumin stimulated growth and food intake but led to deficiency symptoms on the skin. However, the addition of riboflavin resulted in greater growth and normal appearance of skin. The presence of some unidentified growth-promoting factors in the egg-yolk extract is indicated by these results.

Biosynthesis of Niacin. In a study of the site of conversion of tryptophan to niacin in rats, urinary excretions of niacin were observed following four diets: a basal, nitrogen-free niacin-free diet; basal diet plus sulphaguanidine; basal diet plus tryptophan; basal diet plus tryptophan and sulphaguanidine. Results were, respectively: 30.10 mcg., 15.04 mcg., 90.10 mcg., and 31.25 mcg. It is suggested that the conversion of tryptophan to niacin takes place mostly in the intestine by the microflora and partly in some tissues. Constant fecal elimination due to the above supplements indicates that niacin synthesized in the intestine was mostly absorbed and utilized in the body. Feeding of *l*-arginine and *l*-proline did not produce any change in the fecal and urinary excretions of niacin. Prolonged deprivation of the dietary nitrogenous compounds did not produce an adverse effect on the biosynthesis of niacin.

Biosynthesis of Riboflavin. Two papers report different phases of a study of the intestinal synthesis of riboflavin. In one phase, biosynthesis in the presence of carbohydrates was studied. Urinary and fecal riboflavin in adult and young rats with and without sulphaguanidine supplements to riboflavin-free diets was determined when lactose, starch, and sucrose supplied the carbohydrate. Lactose was found to be the most efficient in promoting riboflavin synthesis, with starch occupying the middle position. The intestinal synthesis was found to be greater in young rats than in adults. Riboflavin content of the kidney and liver of young rats fed the starch and sucrose diets was almost the same and did not vary even when sulphaguanidine was administered regularly.

In studying the effect of protein on riboflavin biosynthesis, the fecal riboflavin was reduced to a considerable extent when the level of protein was increased. This is interpreted as due to simultaneous decrease in the level of dietary carbohydrate (lactose). The microorganisms lost the benefit of a favorable medium which lactose creates when present in excess, as in the case of a low-protein diet. Lower urinary excretion of riboflavin on the high-protein diet is also reported and is explained as being partly due to decreased synthesis in the intestine and partly to higher retention of the amount supplied by other endogenous sources, i.e., liver and kidneys. In determining dietary riboflavin requirement, the above effect of protein level on the endogenous eliminations should also be considered.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 147, December 15, 1951

Cholesterol, "giant molecules," and atherosclerosis. A. Keys.—p. 1514.

* Controlled versus free diet management of diabetes. J. L. Wilson, H. F. Root, and A. Marble.—p. 1526.

Chronic stress and peptic ulcer. I. Effect of corticotropin (ACTH) and cortisone on gastric secretion. S. J. Gray, J. A. Benson, Jr., R. W. Reifenstein, and H. M. Spiro.—p. 1529.

Vol. 147, December 22, 1951

Vitamin K_1 emulsions in bishydroxycoumarin emergencies. Results of intravenous administration. T. B. Van Itallie, R. P. Geyer, and F. J. Stare.—p. 1652.

Vol. 147, December 29, 1951

* Conversion of palmitic acid to glucose. Editorials and Comments.—p. 1766.

Alterations of sodium, potassium, and chloride in disease. Editorials and Comments.—p. 1766.

Vol. 148, January 5, 1952

* Malnutrition and anemia in young children. Clinical study of fifty cases. J. P. Price and W. M. Hart.—p. 5.

* Hazards of multivitamin therapy in undiagnosed pernicious anemia. Editorials and Comments.—p. 57.

* Fluorides in table salt. Queries and Minor Notes.—p. 87.

* Bitter taste following gastrectomy. Queries and Minor Notes.—p. 87.

* Linoleic acid in eczema. Queries and Minor Notes.—p. 88.

Dietary Management of Diabetes. Two hundred twenty-one young patients with severe diabetes were studied with regard to results from "controlled" and "free-diet" type of management. The authors conclude that aggressive treatment is better management than the free-diet plan which permits a constantly disturbed metabolic state.

Palmitic Acid to Glucose. Using radioactive isotope C^{14}, several workers showed that less than 10 per cent of the fatty acid was converted into glucose and that in the diabetic animal the amount of C^{14} recovered in urinary glucose was more than half that found in expired air. Several other differences in metabolism were noted between the diabetic and normal animals.

Malnutrition in Young Children. A clinical study of fifty young malnourished and anemic children, ages thirteen to forty-two months, is presented. All were pale, undernourished, listless, tired, and irritable, and subsisted mostly on milk. The authors feel that the nutritional well-being of children after the first year is often unwittingly neglected by parents, and they list six reasons: (a) misunderstanding about milk—that it is not a complete food and many children

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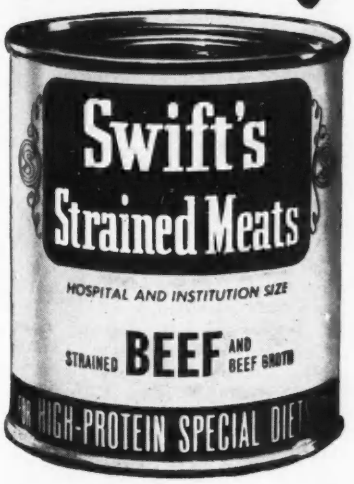

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do not need and cannot take a quart of milk a day and eat the additional foods needed for normal growth and development; (b) failure to wean the baby during the last months of the first year; (c) failure to teach the child early to feed himself. When a child is allowed to feed himself, he appears to enjoy it and the eating of solid foods becomes a pleasure; (d) failure to continue the administration of supplementary vitamins after the first few months of life; (e) poor understanding by parents as to what is a satisfactory diet; and (f) lack of periodic medical assistance.

Multivitamin Therapy in Anemia. Considering the result of some clinical studies made at Johns Hopkins Hospital, it is again noted that the administration of folic-acid-containing vitamin preparations to patients whose symptoms might be attributed to pernicious anemia might be hazardous.

Fluorides in Table Salt. The addition of fluoride to table salt is not advocated as a satisfactory substitute for adding fluoride to the water supply.

Gastrectomy. In a discussion of the reasons for a bitter taste following a gastrectomy and recommendations as to treatment, it is stated that patients who have had a peptic ulcer and have intact vagi should not have free sugar in their diet for a long time.

Linoleic Acid in Eczema. There is insufficient clinical evidence on the use of unsaturated fatty acid therapy in infantile eczema to indicate success with such treatment.

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 193, December, 1951

* The amino acid requirements of man. III. The role of isoleucine; additional evidence concerning histidine. W. C. Rose, W. J. Haines, and D. T. Warner.—p. 605.

* The amino acid requirements of man: IV. The role of leucine and phenylalanine. W. C. Rose, D. T. Warner, and W. J. Haines.—p. 613.

Amino Acid Requirements of Man. Experiments have demonstrated that isoleucine is an indispensable dietary component for man. Its exclusion from the diet is promptly followed by negative nitrogen balance of greater magnitude than that encountered in any other type of amino acid deficiency. Preformed histidine is not necessary for the maintenance of nitrogen equilibrium in adult man. Leucine and phenylalanine are indispensable components of the human diet as negative nitrogen balance occurs with their removal, even when total nitrogen intake is not decreased. Positive balance occurs when leucine and phenylalanine are again added.

JOURNAL OF NUTRITION

Vol. 45, December, 1951

* Nitrogen retained by six adolescent girls from two levels of intake. F. A. Johnston and D. Schlaphoff.—p. 463.

* Magnesium metabolism in college women: observations on the effect of calcium and phosphorus intake levels. J. M. Leichsenring, L. M. Norris, and S. A. Lamison.—p. 477.

* Vitamin B_{12} and the production of polycythemia by cobalt. S. Levy and J. M. Orten.—p. 487.

* The effect of fat level of the diet on general nutrition. VII. Comparison of the potency of arachidonic and linoleic acids in furnishing the requirement for essential fatty acids in the rat. S. M. Greenberg, C. E. Calbert, H. J. Deuel, Jr., and J. B. Brown.—p. 521.

* The effect of fat level of the diet on general nutrition. VIII. The essential fatty acid content of margarines, shortenings, butters, and cottonseed oil as determined by a new biological assay method. H. J. Deuel, Jr., S. M. Greenberg, L. Anisfeld, and D. Melnick.—p. 535.

The effect of vitamin B_{12} on reproduction and lactation in rats receiving pork or beef diets. M. L. Meyer, H. T. Thompson, and C. A. Elvehjem.—p. 551.

The effect of heat treatment on the nutritive value of milk proteins. IV. The biological value of unheated and autoclaved dried skim milk. R. A. Kraft and A. F. Morgan.—p. 567.

* The fortification of bread with lysine. I. The loss of lysine during baking. H. R. Rosenberg and E. L. Rohdenburg.—p. 593.

Nitrogen Retention in Adolescent Girls. Six girls between thirteen and fourteen years of age lived on a controlled diet for nine weeks. The first two weeks comprised a preliminary period. During the first experimental period of three weeks, the mean daily intake of nitrogen was 12.20 gm. corresponding to 76.2 gm. protein. The mean daily amount of nitrogen retained from the diet by the six subjects was 1.42 gm., or 29.9 mg. per kilogram. During the second experimental period of four weeks, the mean daily intake was raised to 13.97 gm., corresponding to 87.3 gm. protein. On this diet, the mean daily amount of nitrogen retained was 2.17 gm., or 43.7 mg. per kilogram. An estimate was made of the amount of nitrogen which needs to be retained for the requirements of growth at this age. Lack of information on the amount of nitrogen needed to replace the losses in hair and nasal excretions and other losses not usually measured in balance experiments made an assessment of the exact amount of nitrogen required by the subjects impossible. The mean intake of 76.2 gm. protein per day was probably adequate for these subjects. The intake of 87.3 gm. protein was undoubtedly more than adequate.

Magnesium Metabolism in Women. Nine healthy college women served as subjects for a mineral metabolism study. During the first four weeks, all subjects were maintained on a basal diet which supplied approximately 260 mg. magnesium, 300 mg. calcium, and 800 mg. phosphorus. This was followed by a second four-week period during which three subjects were continued on the basal diet, three were given a supplement of 1200 mg. calcium, and the remaining three received supplements of 1200 mg. calcium and 600 mg. phosphorus. During the second, third, and fourth weeks, the mean daily fecal excretion of magnesium was 153.5 mg. with a standard error of 3.8 mg.; the urinary excretion was 96.2 mg. with a standard error of 3.2 mg.; and the retention was 11.6 mg. with a standard error of 2.9 mg. Statistically significant differences between subjects were observed in each instance. Using partial correlations as criteria, a significant relationship was observed between fecal calcium and phosphorus, but not between magnesium and either of these elements. When the same statistical technique was applied to the retention data, there was no evidence of association between calcium and magnesium or between phosphorus and magnesium, although a highly significant association between calcium and phosphorus retention was observed. Urinary excretion of magnesium was significantly correlated with the intake levels of both calcium and phosphorus.

Vitamin B_{12} and Cobalt Polycythemia. The daily subcutaneous administration of vitamin B_{12} in rats, in a dosage of 3 mcg. per day for six weeks, then at a dosage of 10 mcg. per day for two weeks longer, did not produce a significant increase in hemopoiesis in the normal rat as measured by the concentration of hemoglobin in the blood. The daily parenteral administration of cobalt produced the characteristic polycythemia without increasing the vitamin B_{12} content of the liver, although there was some increase in the vitamin B_{12} content of the feces. These results are interpreted as evidence that cobalt does not produce a polycythemia by way of the intermediary formation of vitamin B_{12}.

Arachidonic Acid Potency. Methyl arachidonate, when fed at different levels of intake to rats, was found to have varying biologic potency as compared to linoleic acid. The range was from a ratio of 2.8:1 at the highest level of intake (20 mg. daily) to 4.2:1 at the lowest intake level (10 mg.). The mean ratio of potency was 3.5:1 in the relative effectiveness of arachidonate: linoleate. However, considerably greater effectiveness of arachidonate was obtained when it was fed with linoleate. The mean value of the combination was 6.2 times as effective as linoleate alone. A cottonseed oil diet resulted in greater weight gain, however, than low-fat diets supplemented with as much as 100 mg. linoleic acid daily, 20 mg. methyl arachidonate, or mixtures of these two essential compounds. The efficiency of utilization of the calories was increased progressively with increasing dosages of essential fatty acids; however, the highest efficiences were obtained with the 30 per cent fat diet. Males utilized calories more efficiently than females.

Bioassay Method for Essential Fatty Acids. An assay method using rat-growth as the criterion for estimating essential unsaturated fatty acids is described. Samples of butter, commercial cottonseed oil, selective hydrogenated cottonseed oil, non-selective cottonseed oil, and margarine were tested. Results demonstrated that feeding of hydrogenated coconut oil accentuates fat-deficiency symptoms in the rat produced on a low-fat regimen or that the requirement of essential fatty acids for growth is increased with the concomitant ingestion of fat. This deleterious action can be overcome when adequate amounts of linoleate are available. Hydrogenated fats were found to contain a surprisingly high proportion of biologically active polyunsaturated acids. The most striking effect observed in this method was the marked variation in biologic potency between shortenings hydrogenated by

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the selective and non-selective means. The selectively hydrogenated fats are used for frying purposes, the non-selectively hydrogenated fats as shortenings for baking. Margarine oils, prepared by hydrogenation of the vegetable fats, possessed higher concentrations of biologically active acids than the butter samples. Close correlation between the results of the biologic assay and spectrophotometric analysis was found for margarine oils, butters, cottonseed oil, and a selectively hydrogenated shortening. For the non-selectively hydrogenated shortening, the bioassay method gave a result approximately twice as great as that obtained by spectrophotometry.

Loss of Lysine during Bread Baking. The loss of lysine in bread due to baking was found to be about 15 per cent by microbiologic assay. The loss varied from 9.5 to 23.8 per cent. Bread was baked from flour to which was added 0.5 per cent DL-lysine·HCl or 0.25 per cent L-lysine·HCl, amounts equivalent to 0.2 per cent L-lysine. The destruction of added lysine was determined by comparison of the lysine content of this break with that of loaves prepared from unfortified flour. In the bread to which DL-lysine·HCl was added, the loss of L-lysine was found to average 11 per cent ranging from 2.4 to 21.8 per cent. The loss was of the same order of magnitude as that found in the unfortified bread. Using the L-lysine·HCl-fortified formula, loss was considerably higher, averaging 32 per cent and ranging between 25 and 36.8 per cent. Toasting a slice of bread reduced the lysine content by 5 to 10 per cent. A similar loss occurred when bread became stale and dry.

JOURNAL OF PEDIATRICS

Vol. 39, December, 1951

* Calcium and phosphorus studies in Negro premature infants. M. Gleich, S. Smoller, and B. E. Scott.—p. 677.

Calcium and Phosphorus in Premature Infants. The serum calcium, inorganic phosphorus, total protein levels, and roentgenograms of the wrists were studied on twenty-four premature Negro infants at the time of discharge. There was no evidence at that time of rickets, biochemically or roentgenographically. Apparently a simple half-skim milk or evaporated milk formula supplemented with 1000 I.U. vitamin D daily prevented the development of rickets in these premature infants up to the time of discharge.

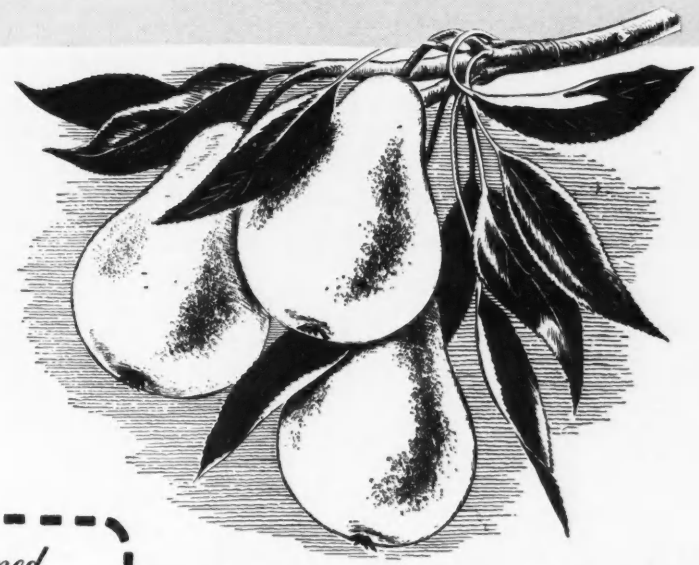
NUTRITION
(Formerly Nutrition: Dietetics: Catering)

Winter, 1951

* Dehydrated foods. R. F. Milton.—p. 292.

Dehydrated Foods. Dehydration of foods by artificially produced heat is a fairly recent operation except for certain dried fruits such as apples and prunes in the United States; however, foods have been sun-dried in tropical climates for centuries. Dehydration's general principles are: (a) reduction of moisture

For your food file — interesting facts on canned pears



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Fat (1)	0.13 gm.	—	—
Protein (1)	0.3 gm.	0	—
Caloric Value (1)	87 calories	3	—
Calcium (1)	7.0 mg.	1	1
Phosphorus (1)	8.2 mg.	—	1
Iron (1)	0.58 mg.	5	6
Vitamin A (2, 6)	12 I.U.	0	0
Thiamine (3, 6)	0.010 mg.	1	1
Riboflavin (4, 5)	0.021 mg.	1	1
Niacin (3, 5)	0.16 mg.	1	—
Vitamin C (2, 6)	2 mg.	2	7

*Percentage based on Recommended Daily Allowance for physically active man—National Research Council. **Percentage based on Minimum Daily Requirement for adult over 12 years of age—Food and Drug Administration.

1. Food Research *11*, 391 (1946)
2. J. Nutrition *28*, 107 (1944)
3. J. Nutrition *28*, 117 (1944)
4. J. Nutrition *28*, 123 (1944)
5. J. Am. Dietet. Assoc. *21*, 357 (1945)
6. J. Am. Dietet. Assoc. *23*, 226 (1947)

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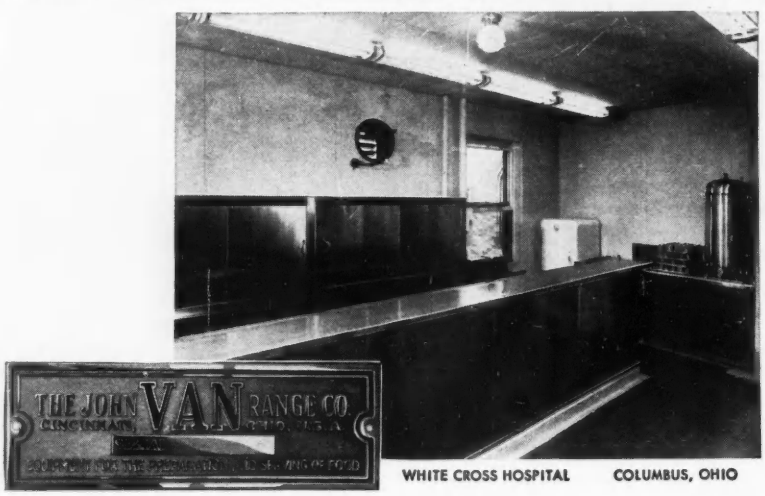
conditions below those favorable to bacteriologic action, mold growth, and enzyme action and (b) reduction of bulk to save storage space and to build up reserves of foodstuffs. Milk, eggs, vegetables, fruits, and fish are the foods most readily applicable to dehydration. Dangers in dehydration are discussed, e.g., over-rapid drying and a too-high temperature, and their resultant damage to the food. Techniques of drying liquids are described, both as to roller and spray drying. The dehydration of root crops, methods of drying, types of dehydraters, and the nutritional value and keeping qualities of dehydrated foods are also described. Natural flavor, the author notes, is not necessarily connected with nutritional value, and if care is taken to see that loss by leaching does not occur, the product will change little in caloric and health value even though it may be less flavorful.

PUBLIC HEALTH NURSING

Vol. 44, January, 1952

* Have you met the parasite family? M. L. Chapman.—p. 16.

The Parasite Family. Study of intestinal parasites has become more important since the end of World War II. Servicemen have returned from tropical regions and spread parasitic infections; population groups have moved from infected to free areas; war-devastated countries have forced their people back to a primitive and less sanitary type of living; and immigrants from infected areas have come into the U. S.—notably the Puerto Ricans, with their low-economic and unsanitary standard of living, who have recently migrated heavily to New York and other cities. Amebiasis, easily contracted and hard to banish, is caused by infected foodhandlers; hookworm by contaminated soil; ascaris, usually by contaminated food or unclean hands in young children. Other parasitic infections, such as schistosomiasis, are less prevalent. The public health program with regard to these infections is described with particular regard again to the Puerto Ricans. Nutrition is a problem for these people; not only is their income marginal, but their native food habits are difficult to break in favor of a balanced dietary.



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AMERICAN RESTAURANT MAGAZINE

Vol. 36, January, 1952

* Tax liability in the purchase of a restaurant. H. J. Ashe.—p. 41.

One-third more dollar volume in industrial restaurants with modern merchandising. H. S. Ehle.—p. 42.

Casserole dishes for good meal management. L. D. Freeman.—p. 42.

* New methods of preparing and cooking food. J. A. Cline.—p. 76.

Tax Liability. Purchasers of restaurants are personally liable for taxes incurred or collected by the seller, this article warns, if the seller fails to discharge these obligations and the oversight is not caught in escrow. Evidence of payment must be demanded by the buyer for his own safety, since a considerable time lag exists between the period for which the taxes are collected and the date of remittance. All types of taxes incurrable by a buyer are discussed, and a final warning concludes the article: the unwary buyer may easily be caught by a seller who is going broke and actually disposing of his business *because* of tax delinquency.

Modern Merchandising. One-third more dollar volume has been achieved by an industrial cafeteria chain in Illinois. Good nutrition is made interesting to the industrial worker, who must be lured away from his high-starch diet, by attractive salad displays, low-priced vegetables, and sanitary wrappings for food eaten on relief periods when there is no time for handwashing. Meetings of employees of the food service department and a thorough training program are maintained. An industrial cafeteria, one of the partners states, has two primary aims: (a) to satisfy plant employees from a food service standpoint and (b) to satisfy plant management from a cost standpoint—and they are important in just that order. Reasonable prices, maximum eye appeal, and attention to cleanliness are of vital importance, he believes, to a successful industrial food service.

New Methods with Food. Suggestions for saving food, time, and labor in restaurant kitchens are given with respect to: meat, vegetables, breads and pastries, and other products.

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Fine to look at, even better to taste! That's what guests everywhere are saying about Le Gout Gelatin Desserts. Flavor is so uniformly true that each of these Le Gout Desserts tastes as though it were just made from fresh, fully-ripened fruit. Preparation is simple, results uniformly fine every time! And, most important, too, these delicious desserts by Le Gout remain firm under long standing, yet they retain all of their original tenderness, sparkling clarity, delightful flavor. That means much to you whenever you have a considerable time lapse between preparation and serving periods! That is what makes these products equally fine for use either as delicious desserts or in your salads. Ask the Le Gout Man or your jobber for a demonstration.

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FREE SAMPLES and RECIPE CARDS. Write today, see how to easily make delicious desserts and salads.

ANOTHER QUALITY PRODUCT OF *Fearn Foods Inc.* FRANKLIN PARK, ILLINOIS

BAKERS' HELPER

Vol. 96, December 22, 1951

* Cold batter for better crackers.—p. 50.

Cold Batter for Better Crackers. The new Portland, Oregon branch of a baking concern uses air-conditioning and refrigeration as its keys to high-quality production. The basis of the system is threefold: control of humidity, control of temperature, and control of air motion and circulation. An interesting feature of this plant is the refrigerated "enrober" tunnels which first bathe cookies in chocolate coating and then let the icing cool, and settle as the cookie travels down the refrigerated length of the tunnel.

FOOD ENGINEERING

Vol. 23, December, 1951

* Short cuts in picking ace workers. J. S. Walters.—p. 69.
* New Roquefort-type flavors. S. Patton.—p. 93.

Costs and methods for pie-stock apples. V. F. Kaufman.—p. 97.

* Quality peeling sets a new pace. L. E. Slater.—p. 106.

Feeding and resting hogs before slaughtering results in greatly improved bacon quality.—p. 167.

Vitamin A potency of butter not cut by neutralization.—p. 172.

Upgrading tomato products.—p. 189.

Vol. 24, January, 1952

* Variety-factors in browning of frozen peaches. M. R. Grice, H. D. Brown, and R. C. Burrell.—p. 131.

Picking Workers. Scientific employee selection has proved successful in a Midwest cannery. For the new personnel procedure (a) forms describing each job in detail, (b) physical examinations "slanted" to the work to be done, and (c) a hand dexterity test have been added to already existing physical, visual, and intelligence tests. The value of these additions is not limited to selection of new employees, but aids in determing promotions and the selection of key personnel.

Roquefort-Type Flavors. Problems arising from the use of mold-ripened cheese in commercial salad dressings are discussed. Two possibilities for overcoming limitations in its use have been investigated: use of extracts of natural cheese flavoring and synthetic Roquefort-type flavors. Promise is also shown by fatty acid-ketone mixtures.

Quality Peeling. High speed plus kitchen-table-like cleanliness, both required by a large baby-food concern, have been achieved simultaneously through the use of engineered continuous steam peeling. The peeler is described in detail with potatoes as an example of the product used.

Browning of Frozen Peaches. Seven varieties of commercially important freestone peaches were studied at The Ohio State University to determine the nature of enzymatic browning. A portion of the peaches was used for measuring rate of enzyme activities and the tannin and acid contents of the fresh fruits; the rest were prepared for freezing in the conventional manner. Five antioxidant treatments were used in freezing, and samples of frozen peaches were removed for analysis after four- and eight-month storage periods. The peaches were assayed for *p*H, total acidity, tannin content, total carotenoids, and evaluated as to color. Those varieties containing large quantities of tannins and enzymes showed high rates of enzymatic browning, while those with smaller amounts showed lower rates.

HOSPITAL MANAGEMENT

Vol. 72, November, 1951

* St. Catherine's has model kitchen.—p. 100.

Model Kitchen. St. Catherine's Hospital, Omaha, has an efficient kitchen scientifically designed to stand up for years under the conditions of hospital service. All the equipment is constructed of angle-iron frames that are electrically welded and covered with heavy-gauge stainless steel. Careful designing has resulted in tough, durable surfaces and pieces of equipment that can easily be removed for cleaning. Equipment has been installed wherever possible on quarry tile bases. The bakery and various food preparation centers, as well as the dishwashing area, are described.

HOSPITALS

Vol. 26, January, 1952

* Modular equipment modernizes the kitchen. E. R. Kingsbury.—p. 55.
* Refinements of hospital food service. J. T. Black.—p. 60.

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YOU'RE ALWAYS SURE of faster service with a Savory. Because Savory keeps pace with your needs, you are never bogged down by slow toasting . . . it keeps toast service ahead of toast demands. The continuously moving conveyor makes the toaster easy to load — and it unloads itself automatically. There's no waiting, no confusion, no toast bottlenecks, no matter how heavy your demand.

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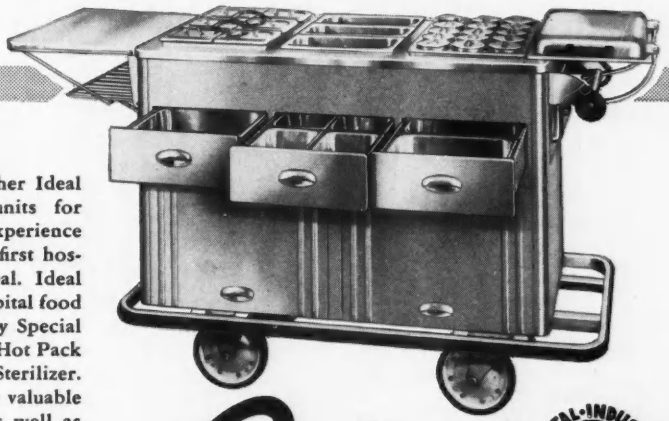
Ideal engineering makes a little electric power do a big job in a food conveyor. An average electric flatiron consumes 1000 watts per hour. The maximum required by an Ideal Food Conveyor is 961 watts per hour, which keeps 60 meals or special diets hot, fresh and at their nutritional best.



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Modular Equipment. Modular equipment, i.e., equipment which is both standardized and unified, has been put to work in an Indianapolis cafeteria as a solution to some work simplification problems in the kitchen. The author, Director of the cafeteria, describes and illustrates the equipment adopted. In this installation, the size of tray, rack, or pan has been planned to fit or dovetail readily with the related refrigerators, shelves, ovens, or trucks in an orderly manner. Thus all equipment and facilities have been interrelated, which has resulted in the need for fewer trays, pans, sizes, and shapes, and a saving in space, shelves, trucks, handling, breakage, and cleaning. One important advantage in using the modular principle is that fractional-size pans to be used in standardized spaces are possible. In this cafeteria, the modular innovation has been applied to salad refrigeration, milk refrigeration, glassware handling, ice cream trucks, chopping boards, bus pans, even a portable ice bin. Drawings showing the principles involved, as well as actual photographs illustrate this article. Eight advantages of modular equipment for kitchen use are listed.

Food Service Refinements. Michael Reese Hospital, Chicago, as previously reported, has installed a new conveyor-tray-assembly central food service. This article is a conclusion of the discussion and describes improvements and variations of food service possible on an assembly line. A comprehensive chart of three theoretical conveyor systems indicates how such planning can be done.

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USE HAS PROVED ITS VALUE

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LANDERS, FRARY & CLARK, NEW BRITAIN, CONN.

THE HOTEL MONTHLY

Vol. 60, January, 1952

* Lenten dishes can be attractive and economical. R. Preschley.—p. 51.

Lenten Dishes. Skill and care in preparing low-cost meatless items can prevent the Lenten drop in food sales volume and check averages. Sales resistance to fish, it is explained, can be traced principally to overcooking which leaves the product dry, hard, and flavorless. "Made" dishes using fish are discussed, and the importance of an appetizing cheese sauce for macaroni is stressed.

INSTITUTIONS

Vol. 30, January, 1952

* Train from top down to build skill, teamwork. —p. 3.
* Let recruiting tools do top manpower procurement job. 2. Ways to get workers.—p. 4.
* Superlative specialties: foundation of food service success.—p. 22.
* Pep up preparation pace with production line kitchen.—p. 85.

Cooking controls essential to sound management plan. 5. Establish cooking controls.—p. 100.

Train from Top Down. "Selling" the need for effective training of institutional personnel is no longer necessary; employees realize the job success and satisfaction which are gained from it, while management appreciates that it widens the margin between profit and loss. However, everyday business and production problems tend to push this real need into the background—even where management is fully aware of the danger of neglecting training. This article emphasizes the need for a systematic training program and suggests ways for managers to institute such a program whether they have ability and education along such lines or not. However, the most skilled panel of consultants or the finest manuals will fail if training does not begin with key personnel, the article warns.

Recruiting Tools. Quantity, rather than quality, must be sought in employees today and every possible method must be utilized to reach the available labor supply. This article discusses the various ways of recruiting employees, i.e., newspaper advertising, present employees' friends and relatives, past applicants once disqualified, former employees possibly eligible for re-hiring, public school students about to graduate, laid-off workers in a locality with a temporary oversupply of labor, and social service agencies. Advantages and disadvantages of each method are presented, and it is pointed out that "trial and error" is the only way to discover a successful recruiting plan or combination of plans.

Specialties Spell Success. Successful food service, this article affirms, depends on a formula: select one dish in each category (soup, salad, entrée, dessert); "work it up" to peak perfection; serve it often and with fanfare. Suggestions and photographs are given.

Mercy Hospital, Dyer, Indiana

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In nearly seven decades of specialized service to those who serve many people each day, we have learned much about blending teas that please. The country's leading hospitals serve Sherman Blend exquisite tea to cheer the sick and stimulate the convalescent appetite. Clubs, hotels, restaurants know that this luxury beverage at an economy price will flatter the taste of the most fastidious patron. For less than three-tenths of a cent per cup more, you can have this insurance of guest satisfaction.

Sexton
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JOHN SEXTON & CO., CHICAGO, 1952

Production-Line Kitchen. Central State Hospital, Norman, Oklahoma, achieves a smooth flow of food by using production-line techniques. A single kitchen, departmentalized into ten integrated units, serves both the main dining room and patients. The layout is described and illustrated by photographs. Warm, cheerful decorations, good seating arrangements, and soft dinner music help make the patients—all mental cases—comfortable.

THE MODERN HOSPITAL

Vol. 78, January, 1952

* Causes and cures of employee problems. A. M. Macfarlane.—p. 116.

Employee Problems. Finding, holding, and training food service employees rank as problem number one for every quantity food operator today. Many workers are entering the armed services or leaving hospitals for higher pay in defense plants, and new employees of a high caliber are hard to find. Hiring of older workers is a possible solution, particularly in view of the steady increase in the number of old people in this country. Sources of obtaining workers—including referrals from present employees—are given, as are tips on good want-ad writing. Holding of employees is discussed, as well as training and reduction of physical labor by use of kitchen "gadgets" and partially prepared foods. Such equipment and food may be expensive, but today's conditions require an adaptability to change consistent with the unusual labor situation; selectivity in hiring people must give way to selectivity in "hiring" the inanimate.

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These major advances in steam cooking were originated by Market Forge, one of the oldest and largest companies manufacturing steam cookers today. Always look to Market Forge for the first in modern improvement and superiority.
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Model 3M Direct Connected
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EVERETT 49, MASSACHUSETTS

QUICK FROZEN FOODS

Vol. 14, December, 1951

* How frozen food departments are being decentralized. A study of cabinet merchandising in Southern California. G. Brauer.—p. 45

Decentralized Frozen Food Departments. Meat buying should not involve going the length of a store from the fresh to the frozen meat counter—and the same holds true for vegetables, bread, or the many other products being sold in frozen form. Frozen food retailing in Southern California is now based on that premise; logical grouping, first begun in 1950, has been installed in many grocery stores in that area. Another convenience for frozen food shoppers is universal use of transparent food containers, rather than the former opaque ones which made selection difficult.

RESTAURANT MANAGEMENT

Vol. 69, December, 1951

* National restaurant news digest.—p. 5.
* New trends in food.—p. 13.

Vol. 70, January, 1952

New trends in food.—p. 11.
Pin-pointing *your* profits. Harris, Kerr, Forster and Company.—p. 30.
* Creative cleanliness. K. G. Vester.—p. 32.
* Modern miracles with lamb. P. P. Logan.—p. 38.

National News. On November 1, the 10 per cent excise tax on commercial kitchen equipment was removed.

New Trends in Food. A new "September" red raspberry bears two crops a year and is said to have a better flavor than the "Indian Summer" variety . . . A new drying process which results in better stability in the reconstituted fruit juice has been patented by California scientists. . . A new preparation has been developed which, when injected into the stems of a living plant, will keep it fresh two or three times longer than is now possible.

Creative Cleanliness. Rocky Mount, North Carolina, instituted a city-wide sanitation plan involving a self-inspection plan for restaurants. Initial inspections caused restaurant employees to say "I'll eat at home until this mess is straightened out," and managers to say "This hits the spot." Rechecking revealed an over-all improvement, averaging 18 points higher than for the first survey.

Miracles with Lamb. Sheep themselves are first discussed in this article—their history, kinds, and meat yield. Grades of carcasses are described. Methods of cooking, together with a note that lamb is apt to be scarce for some time, conclude the article. A chart showing wholesale cuts of lamb appears, as do photographs of how lamb is slaughtered and prefabricated for freezing.

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Dull, monotonous meals can depress your special-diet patients, discourage them from following prescribed menus. But Gerber's can brighten the picture!

One way is through the use of Gerber's "Special Diet Recipes" booklet . . . a collection of tempting recipes based on strained foods. With such variety, your patients are more apt to follow their suggested regimens faithfully and cheerfully.

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News Notes

Havana Conference on Vitamins and Hormones. The International Conference on Vitamins and Hormones convened on January 25 in Havana, Cuba. At this meeting, world leaders in nutrition research presented papers. Dr. Charles Glen King, Nutrition Foundation, Inc., pointed out recent advances in nutrition research as well as fields in which further work needs to be done if we are to understand the metabolic processes which convert food into tissue and energy and their disturbances. Dr. Tom Spies presented a paper on a study of the use of vitamin B_{12} for children with nutritional deficiencies, including anemia. No convincing evidence that vitamin B_{12} is a growth-stimulating factor was found.

Dr. C. A. Elvehjem, University of Wisconsin, discussed the relation between tryptophan and niacin, pointing out that in experiments with rats in his laboratory, tryptophan has been shown to be converted into niacin. This he declared is important, because "most diets contain at least 50 to 100 times as much tryptophan as niacin."

In another presentation, Dr. Elmer Sevringhaus reported on the Bataan experiment in the Philippines with rice enriched with a "pre-mix" of thiamine —a practice which has resulted in a reduction of 89 per cent in the incidence of beriberi in the population.

Drs. George R. Cowgill and Willard A. Krehl and Messrs. Robert R. Winters and Robert R. Schultz, Yale Nutrition Laboratory, discussed the relation of adrenal function and pantothenic acid. Apparently when there is a lack of pantothenic acid, the cortex of the adrenals does not produce enough hormones, one of which is cortisone. Administration of cortisone seems to reverse damage to the adrenals, at least in rats.

Also on the program was Dr. Robert S. Harris, Massachusetts Institute of Technology, who discussed the food composition studies made of Latin American plants and emphasized the need for utilizing indigenous food sources in various parts of the world to alleviate food shortages.

The conference was organized by Drs. Tom Spies, Guillermo Barcia-Lopez, and Ramon Suarez, University of Havana, the Fundacion de Investigaciones Clinicas of San Juan, Puerto Rico, and Northwestern University. Both the American Medical Association and the World Health Organization sent official representatives.

Low-Sodium Community Project. In January, the Chicago Heart Association held a series of four 1-hr. demonstrations on the preparation of food for the low-sodium diet. Co-sponsors of the demonstrations were the Chicago Dietetic Association and the Chicago Home Economists in Business. The demonstrations included the preparation of soups, meat, fish, vegetables, bread, cereals, and desserts. They were open to patients, cooks in the patients' families, dietitians, physicians, and clinic personnel. This activity is part of a larger project which includes the compiling of a list of commercially prepared low-sodium and salt-free products available in Chicago. A third facet of the project has been to gain the cooperation of a Loop restaurant in serving moderately priced low-sodium lunches and dinners for the convenience of patients working in the downtown district.

WHO Publication. *The Lamp Is Lit* is the title of an attractive new booklet issued by the World Health Organization's Division of Public Information. It explains the purpose and history of WHO. Liberally illustrated with photographs of workers and patients, the booklet describes work done to combat and prevent the world's diseases and to increase sanitation. A nation's food production, it is noted, is directly related in many ways to incidence of disease, with the example of malaria as a clue to the collapse of Babylonia, the granary of ancient times. "Without food," the author writes. "people cannot survive; without health they cannot win . . . food . . . and without knowledge of how to better both, they cannot improve either . . . and without material welfare they cannot achieve human dignity or, indeed, their human rights." *The Lamp Is Lit* may be obtained from International Documents Service, Columbia University Press, 2960 Broadway, New York 27, for 25 cents.

Summary on Chronic Disease. *Steps toward Prevention of Chronic Disease* is the recently published summary of the National Conference on Chronic Disease: Preventive Aspects, held in March, 1951, in Chicago. The Conference was co-sponsored by the Commission on Chronic Illness, the U. S. Public Health Service, and the National Health Council. The booklet opens with a listing of the eight objectives of the conference. The text itself deals with such subjects as early detection and screening of chronic illness, scientific research, the physician's role, community responsibility, training of professional workers, and public education for prevention. A.D.A. was one of the organizations participating in the Conference a year ago, and nutrition is noted as important in the cause or control of many chronic diseases. The booklet may be purchased for 50 cents from Health Publications Institute, Inc., 216 North Dawson Street, Raleigh, North Carolina.

Public Health Reports Expanded. *Public Health Reports*, published since 1878 by the U.S. Public Health Service, has been since the first of the year appearing in a new, enlarged format as a monthly publication rather than weekly. Two other technical publications of the Service have been incorporated in it, namely, the *Journal of Venereal Disease Information* and the *Communicable Disease Center Bulletin*. The new publication will also include the functions of the monthly Tuberculosis Control Issues of the old *Public Health Reports*. It will be concerned with: the professional and technical aspects of public health practice; problems of health administration; and research in these fields, particularly as it involves administrative practice, program development, and applied research. Dr. Edward G. McGavran, Dean, School of Public Health, University of North Carolina, has been appointed Chairman of the Board of Editors.

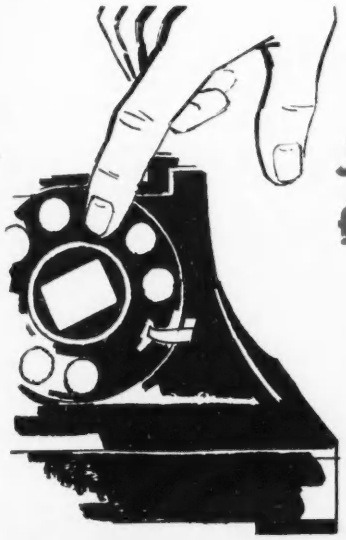
Government Publication. *Peaches—Facts for Consumer Education* is Agricultural Information Bulletin No. 54, second in a series on consumer information issued by the Bureau of Human Nutrition and Home Economics, U.S.D.A. The booklet, prepared by Irene H. Wolgamot, discusses the origin of peaches and U.S. consumption in 1948. Facts on nutritive value, market information, selection, use in family meals, and home canning and freezing are also given. The sub-section titled "Tips on Handling and Preparation" gives especially useful help on storage of fresh (ripe and unripe), peeled, dried, and frozen peaches. Tables are presented on nutritive content; normal seasonal availability; characteristics of common varieties; grades for fresh, canned, and frozen peaches; yield from fresh peaches; and quantities in commercial cans. *Peaches—Facts for Consumer Education* may be obtained from the Government Printing Office for 10 cents a copy.

Dr. Lowenberg Accepts New Appointment. Dr. Miriam E. Lowenberg, formerly Consultant in Nutrition, Mayo Clinic, has been appointed Professor and Head of the Department of Foods and Nutrition, The Pennsylvania State College, effective February 1. Dr. Lowenberg, a member of the JOURNAL Board, succeeds Dr. Eva Donelson Wilson.

Plentiful Foods. The U.S.D.A. lists the following foods expected to be in plentiful supply during March:

Protein foods

Buttermilk	Eggs
Cheese, cottage	Fish, frozen
Chickens—broilers and fryers	Milk—nonfat dry solids



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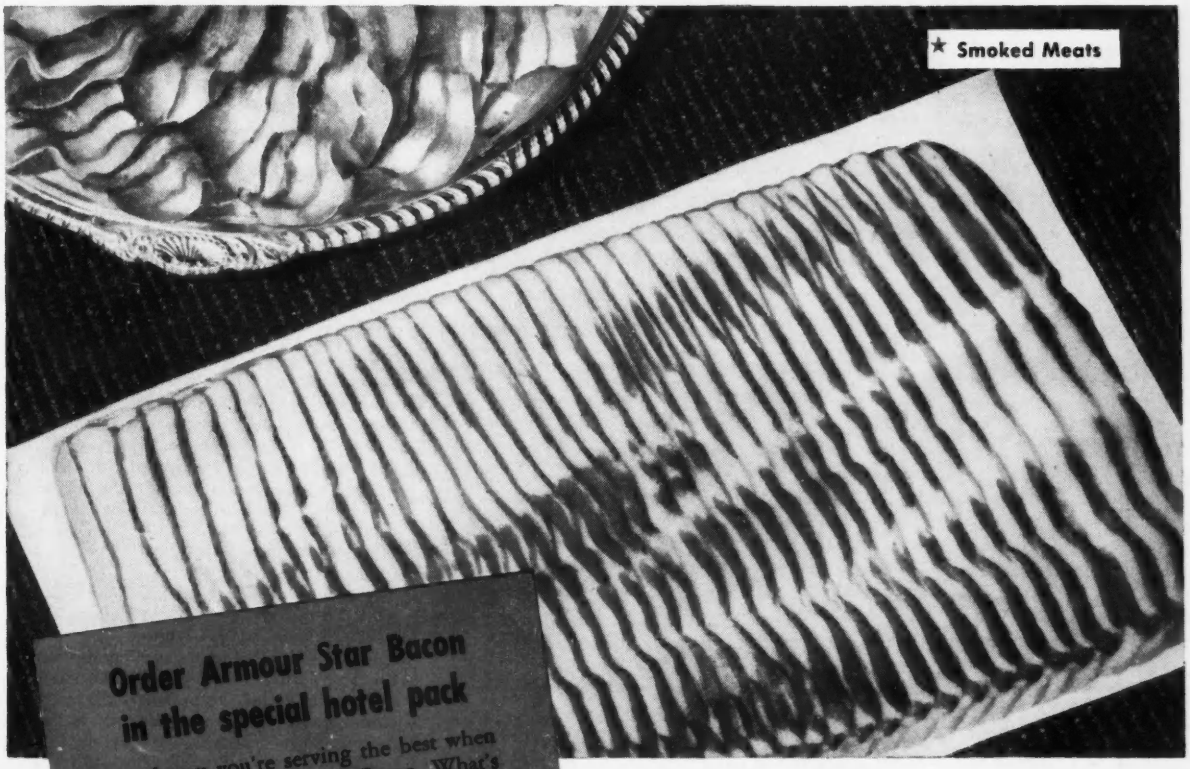

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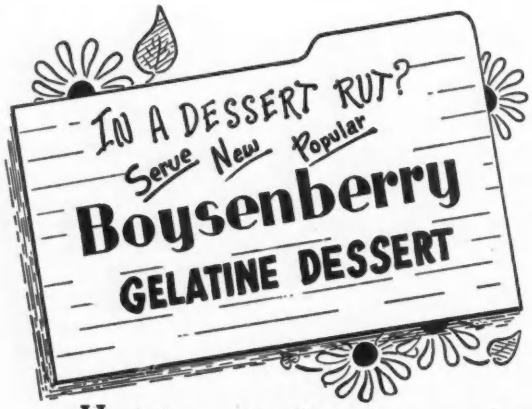

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Perfect for salads as well as desserts!

Each 1 lb. 10 oz. can makes one gallon or 32—4 oz. servings at a cost of 1¾ to 2 cents per serving.

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Case of 6/10 lb. cans.....lb. 37c 4 dozen 1 lb. 10 oz. cans.....Doz. $7.55

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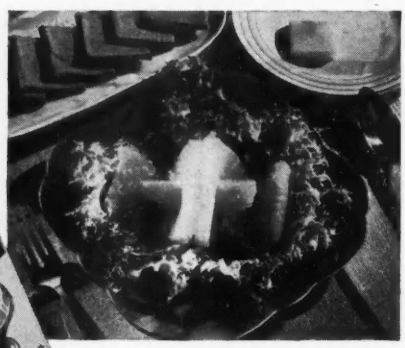

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Fruit juices, citrus	Salad oils
Grapefruit	Shortening, vegetable
Honey	

Home Economics Weekend. "Food and People" will be the theme of the annual Spring Weekend at The Pennsylvania State College's School of Home Economics, April 25 and 26. The subject matter will cover conservation of America's food supply to aid other nations. The program will feature talks and discussion periods on economy, food preparation, and nutrition as well as food demonstrations and exhibits. Further information, plus a detailed program, is obtainable on request from the School of Home Economics, The Pennsylvania State College, State College, Pennsylvania.

Meetings. The *National Restaurant Association* will hold its 33rd Annual National Restaurant Convention and Exposition May 5 through 9 in Chicago.

The 29th Annual Conference of the *American Physical Therapy Association* will be held in Philadelphia, June 23 through 28.

The 43rd annual meeting of the *American Home Economics Association* will take place in Atlantic City, June 24 through 27.

Graduate Program in Nutrition and Public Health. A new program leading to a master's degree in nutrition with a major in public health has been announced by The Pennsylvania State College. The plan is cooperative between the Department of Foods and Nutrition, School of Home Economics, The Pennsylvania State College, and the Graduate School of Public Health, University of Pittsburgh.

Summer School Session. The New York State College of Home Economics, Cornell University, Ithaca, has announced the dates of its summer session this year—July 7 to August 16. A special effort will be made to help college graduates lacking one or more courses required for membership in A.D.A. Detailed information may be obtained from Katharine W. Harris, Head, Department of Institution Management.

Air Force Promotions. The Women's Medical Specialist Corps of the U.S. Air Force has announced the following promotions for dietitians: to the temporary rank of Major—Barbara M. Ryan and Ruth Ramsay McCullough; to the temporary rank of Captain—Harriet J. Goodale and Carrie L. Partridge.

Jean Hughes Voorhies. Word has been received of the death on January 29 of Jean Hughes Voorhies, Assistant Professor of Home Economics, Wayne University, Detroit. Mrs. Voorhies, an A.D.A. member since 1939 and a life

Meat and its Important Contribution of Essential Minerals

With the exception of calcium and iodine,[1] meat, as customarily consumed, makes an important contribution to the mineral needs of the American people. Its minerals include those needed in substantial amounts as well as those needed in trace amounts only.

The array of data listed below gives the approximate amounts of essential minerals provided by muscle meat when seven ounces per day are consumed.[1] The minerals include those now known to be essential components of the human organism—the skeletal framework and teeth, soft tissue structures including blood, and substances concerned in regulatory functions.

APPROXIMATE MINERAL CONTENT OF MEATS

200 Gm. (approx. 7 oz.),[1] Edible Portion (Uncooked)

	Beef Round	Lamb Leg	Pork Loin	Veal Shoulder
Minerals, total[2]	2.0 Gm.	1.8 Gm.	1.8 Gm.	2.0 Gm.
Calcium[2]	22 mg.	20 mg.	20 mg.	22 mg.
Chlorine[3]	147 mg.	136 mg.	125 mg.	147 mg.
Copper[3]	0.2 mg.	0.2 mg.	0.2 mg.	0.2 mg.
*Iodine[4] (Ohio animals)	0.02 mg.	0.03 mg.	Data not available	0.01 mg.
Iron[2]	5.8 mg.	5.4 mg.	5.0 mg.	5.8 mg.
Magnesium[2]	46 mg.	42 mg.	39 mg.	46 mg.
Phosphorus[2]	360 mg.	426 mg.	372 mg.	398 mg.
Potassium[3]	661 mg.	610 mg.	559 mg.	661 mg.
Sodium[3]	164 mg.	152 mg.	139 mg.	164 mg.
†Cobalt[5]	0.0002 mg.	———	Data not yet available	———
†Manganese[3]	0.03 mg.	0.03 mg.	0.02 mg.	0.03 mg.
†Zinc[5]	9.4 mg.	———	Data not yet available	———

*Iodine content of meat varies with the iodine content of feed of the animals.
†Needed in trace amounts only.

The average values for iron, phosphorus, and copper of the four kinds of meat shown constitute about 46, 25, and 100 per cent, respectively, of the National Research Council's recommended daily allowances for adults, and the average values for chlorine, potassium, and sodium constitute about 14, 63, and 16 per cent, respectively, of the estimated daily adult needs, as based on mineral balance studies.[6] Although no specific information is available on the quantitative needs for cobalt, magnesium, manganese, and zinc, nutrition information would suggest that the amounts reported above have nutritional importance or significance.

In addition to its notable content of essential minerals, meat also furnishes large amounts of biologically complete protein and important amounts of vitamin B complex, which includes biotin, choline, folic acid, inositol, niacin, pantothenic acid, pyridoxine, riboflavin, thiamine, and vitamin B_{12}. On the basis of its rich contribution of nutritional essentials, meat well deserves its prominent place in the daily diet of the American people, the world's best-nourished people.

1. Recent estimates of the U. S. Department of Agriculture indicate that the per capita consumption of meat in the United States approaches seven ounces per day.
2. Watt, B. K., and Merrill, A. L.: Composition of Foods—Raw, Processed, Prepared, In Agriculture Handbook No. 8, United States Department of Agriculture, 1950.
3. Estimated on basis of protein content of meats. Sherman, H. C.: Food Products, ed. 4, New York, The Macmillan Company, 1948, p. 155.
4. Ohio animals; varies with iodine content of feed. Johnson, H. J.: Bridges' Dietetics for the Clinician, ed. 5, Philadelphia, Lea & Febiger, 1949, p. 800.
5. Mitteldorf, A. J., and Landon, D. O.: Analytical Chemistry; Spectrochemical Analysis of Beef for Mineral-Element Content, Armour Research Foundation of Illinois Institute of Technology. In Press.
6. Dauphinee, J. A.: Sodium, Potassium, and Chloride Malnutrition, Including Water Balance and Shock, in Jolliffe, N.; Tisdall, F. F., and Cannon, P. R.: Clinical Nutrition, New York, Paul B. Hoeber, Inc., 1950, p. 341.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

American Meat Institute

Main Office, Chicago...Members Throughout the United States

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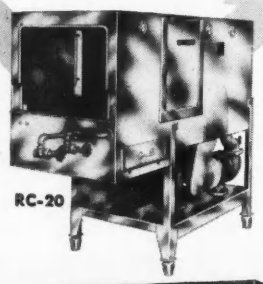
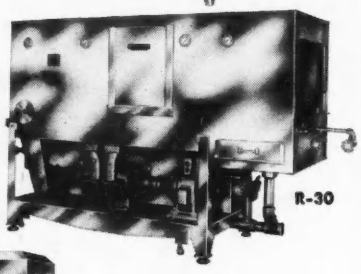
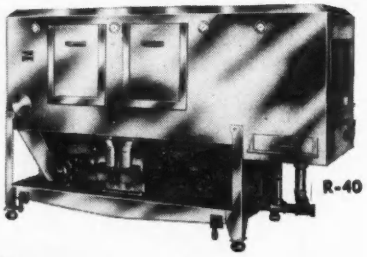

RC-20


R-30

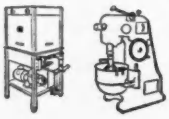

R-40

Model RC-20
Capacity:
2400 dishes per hour

Model R-30
Capacity:
4800 dishes per hour

Model R-40
Capacity:
6000 dishes per hour

COLT AUTOSAN



DISHWASHING, SANITIZING
DRYING and MIXING MACHINES

member since 1944, had also been on the staff of the Department of Institutional Management at Kansas State College and has been employed by the Post Intermediate School, Detroit.

Marjorie D. Wainwright. The A.D.A. office has been notified of the death of Marjorie D. Wainwright in November, 1951. She had been a member of the Association since 1946, having held positions at Cook County Hospital, Chicago, as Supervising Dietitian, and with the Dietary Department, Medical Branch of the University of Texas in Galveston.

New York Nutritionists and Home Economists Meet. The semi-annual meeting of the New York State Association of Nutritionists and Home Economists was held in White Plains, November 1 and 2. The program included a discussion on the "Use of the New Manual on Normal and Modified Diets—A Manual for Professional Personnel." This manual was prepared by the Bureau of Nutrition, N.Y. State Department of Health and the State Department of Social Welfare to facilitate pricing of special or therapeutic diets.

May McDonald, State Department of Social Welfare, discussed "New Mandatory Standards for Welfare Allotments." These standards will become effective this year. A panel discussion on "The Nursing Home Program" outlined the type of assistance being given to New York's private nursing and convalescent homes.

Six Months' Storage Best for Beef. Beef stored six months at a temperature of 0°–10°F., the Missouri Agricultural Experiment Station announces, is far better than that stored a year. The Station, which tested various storage temperatures, times, and wrappings (heavy aluminum foil is best and waxed paper worst), has found results which emphasize the fact that a freezer is not a "bank" where food can be kept indefinitely. Best returns come from a regular turnover of food. Also thrown overboard is the familiar saying, "It's better to store meat at a higher, even temperature than at a low but fluctuating temperature." In the Missouri tests, beef stored six months was little affected by the shifts in temperature between 0° and 10°F.

News of State Associations

California Dietetic Association. The *Bay Section* of the California Dietetic Association met January 8 at the Sir Francis Drake Hotel in San Francisco. Mildred Inwood, Director of Food Research for Western Hotels, described a new long-range program being used and tested by her hotel chain for standardization and improvement of their food service. This program includes the standardization of recipes and portion sizes, employee training, and kitchen organization. Miss Inwood's staff tests the practicability of solutions to problems and

Genuine JELL-O quality dishes help you keep food costs down!

JELLIED CAULIFLOWER MEXICAN

For a sparkling salad treat, dissolve 1 lb. Lemon Jell-O in 2¼ qts. hot water. While it's chilling, parboil cauliflower heads just 5 minutes. Drain, cut into 2½ qts. small florets, and add ½ cup chopped pimentos, ½ cup chopped green peppers, ¼ cup grated onion, and 2 tablespoons salt. Marinate in 1 cup vinegar 15 minutes. Fold vegetables into slightly thickened Jell-O, pour into 32 molds, and chill until firm. Serve on crisp greens with mayonnaise. Costs as little as . . .

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So why not keep some of these many wonderful Jell-O treats on your menu? You'll save on costs, and you'll be building quality . . . volume . . . and customer acceptance.

CHOCOLATE PEANUT BUTTER PUDDING

Here's a brand-new flavor thrill for your customers. Prepare 1½ lbs. Jell-O Chocolate Pudding as directed on package, with 2 cups cold milk, 3 quarts scalded milk. Pour hot pudding gradually over 2 cups peanut butter, mixing well. Cool in shallow pans, beat slightly, then serve in parfait glasses, garnished with whipped cream and chopped nuts. A taste sensation for 32 at a cost to you of only about . . .

6¢ PER SERVING!

LEMON AND ORANGE PIE

Fresh twists on old established favorites are always welcome. Here's one your customers should certainly take to. Prepare Jell-O Lemon Pie Filling as directed on package, folding in 1½ tablespoons grated orange rind for each pie. Turn filling into baked pie shells, top with meringue, and brown in hot oven (425°F.) 5 or 6 minutes. The orange adds a welcome double flavor to this time-honored favorite, lemon meringue pie. Costs you only about . . .

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if a solution seems feasible, it is further tested under actual operating conditions by the staff of the Sir Francis Drake. If the technique proves successful, it is adopted by the twenty-three other hotels belonging to the chain.

District of Columbia Dietetic Association. Officers of the District of Columbia Association for 1951–52 are: President, Gladys L. Stoddart; Vice-President, Dorothy L. Bovee, American Red Cross; Secretary, Helen M. Cacheris, Office of the Quartermaster General; and Treasurer, Martha Bowling, Georgetown University Hospital. Section chairmen are: Community Nutrition, Evelyn Blanchard, U.S.D.A. Extension Service; Diet Therapy, Jean Crooks, Dietetic Division, VA Central Office; Food Administration, Maj. Helen Davis, WMSC; and Professional Education, Hazel Lapp, College Park, Maryland.

Massachusetts Dietetic Association. The Massachusetts Dietetic Association held its semi-annual business meeting on January 15 in Boston. Lillian Burchett, Chef, Hotel Puritan, discussed "Keeping Flavor in Food," and E. C. Crocker, Arthur D. Little Company, Cambridge, chose as his topic "Flavor Adds Interest to Meals."

Montana Dietetic Association. The Montana Dietetic Association held its 1951 annual meeting in Bozeman on November 9. The program included:

"Dietary Management in Medical Disease"—Dr. Deane C. Epler, President, Gallatin County Medical Association

"Nutrition for Dental Health"—Dr. Wayne Thompson, Chairman, Council on Dental Health, Montana State Dental Association

"Administrative Techniques in Dietary Department Management"—Richard Lubben, Past President, Montana Hospital Association

"Local Public Health Services and Legislative Needs in Montana"—Dr. L. S. McLean, Montana State Board of Health

"Report on Nutritional Status Research Project"—Dr. Lura Mae Odland, Professor of Home Economics Research, Montana State College

"Current Hospital Expansion in Montana"—Frances McDonald, Extension Rural Health Specialist

Members of the Montana Dietetic Association voted at their annual business meeting to accept the State Board of Health's request for help in writing a brochure to help small hospitals, nursing homes, and state institutions. Such a booklet will cover menu planning, food buying and preparation, food service techniques, and the most common therapeutic diets. A second project being undertaken this year by the Association is a study of the status of dietitians in Montana.

New Jersey Dietetic Association. The New Jersey Dietetic Association held a joint dinner meeting with the New Jersey Home Economics Association on February 20. Betsy Helburn, Nutritionist, International Ladies Garment Workers Union, New York City, spoke on the nutrition clinic at the Union Health Center. Dr. Eugene M. Katzin, Medical Director, Essex County Blood Bank, and Blood Transfusion Association, discussed "Blood in Community Life."

The New Jersey Dietetic Association has approved a scholarship award of $200 to a graduate of a high school within the state who intends to enroll as a home economics student in college.

North Carolina Dietetic Association. Members of the *Charlotte Dietetic Association* held their November meeting in observance of Recruitment Week for professional women by the armed services. Sgt. Ethel Anderson was guest speaker and addressed the members on the services' immediate need for dietitians and other professional women. M. N. Cutlip also spoke to the group on the processing and grading of canned goods and the proper method of selecting them for quality and price.

Ohio Dietetic Association. On January 25, the *Dayton* Dietetic Association heard Dr. Margaret A. Ohlson, President, A.D.A., talk on "Fair, Fat, and Forty." Representatives of the *Cincinnati* and *Columbus* groups were also present. In her speech, Dr. Ohlson told how research was carried out at Michigan State College on the moderate-fat

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A non-caloric sweetener that keeps its full, natural-tasting sweetness even when baked at high temperatures for prolonged periods, SUCARYL is ideal for perking up the normally drab, unappetizing meals of persons on sugar-restricted diets. Makes for greater menu variety, since it can be used in any number of foods that otherwise would be too high in calories or carbohydrates. SUCARYL enhances taste appeal, too, because it can be cooked right in to give foods a sugar-like sweetness throughout—with no bitter or metallic aftertaste. Available as SUCARYL Sodium Tablets, in bottles of 100 and 1000; and SUCARYL Sweetening Solution, both sodium and calcium forms, in 4-fluidounce bottles.

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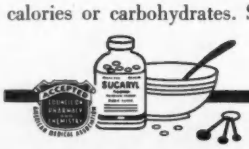

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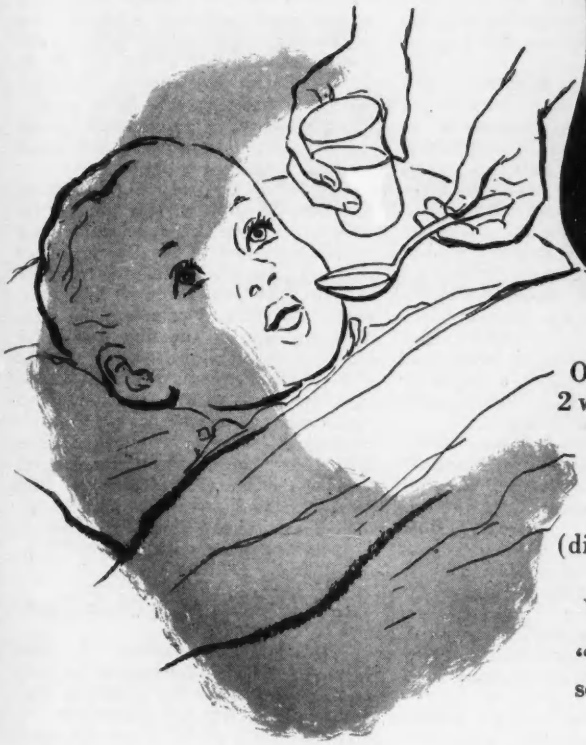

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**J. Pediat. 39:325, 1951*

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reducing diet. The National Dairy Council film on weight reduction, followed by a question-and-answer period, closed the meeting.

Pennsylvania Dietetic Association. On January 8, the regular meeting of the *Philadelphia Dietetic Association* was held at Pennsylvania Hospital. Henderika J. Rynbergen, Assistant Professor of Science, Cornell University, New York Hospital School of Nursing, New York City, spoke on "Teaching Student Nurses Nutrition, Its Problems and Rewards." Miss Rynbergen expressed the hope that more dietitians would find an interest in teaching science along with nutrition and that these ideas would be stressed by home economics instructors in college. She feels, moreover, that nutrition is not being presented to advantage by the young dietitian who either does not want to teach or who has had insufficient experience in the teaching field.

Following her talk, Miss Rynbergen called for problems from the audience and conducted group discussions on these questions. Since many directors of Philadelphia schools of nursing attended the meeting, response was good. One question centered around the value of laboratory hours in nutrition versus diet therapy. It was felt these hours could be reduced in favor of devoting extra time to patient contact. Another was the question of placing the teaching dietitian on the nursing education staff where she would have a growing background for her work in making nutrition an interesting subject for the student rather than merely a required course.

Officers of the *Lehigh Valley Dietetic Association* for this year are: President, Edith M. Iffland, Allentown Hospital, Allentown; Vice-President, Mary Jane Christ, Bethlehem; Secretary, Joan Leiss, Bethlehem; and Treasurer, Anne Vlossak, Easton Hospital, Easton.

The *Nittany Valley Dietetic Association* has elected the following officers, all of State College: President, Marjorie K. Horton; Vice-President, Helen Guthrie; and Secretary-Treasurer, Dorothy Svenson.

This year's officers for the *Northeastern Pennsylvania Dietetic Association* are: President, Marie C. Druffner, Scranton State Hospital, Scranton; Vice-President, Eva Dixon, Wilkes-Barre; Secretary, Frances Adamo, Hahnemann Hospital, Scranton; and Treasurer, Rachel Barney, Wilkes-Barre.

The *Pittsburgh Dietetic Association's* 1951–52 officers are: President, Florence G. Fralin, Visiting Nurse Association; President-Elect, Marguerite Vesely, Suburban General Hospital; Secretary, Doris Korol, University of Pittsburgh School of Nursing; and Treasurer, Helen Kmetz, Mercy Hospital.

South Dakota Dietetic Association. The South Dakota Dietetic Association held its second annual meeting November 9 and 10 at South Dakota State College, Brookings. Beulah Hunzicker, President-Elect, A.D.A., spoke on "A Dietitian Looks at Her Profession." The following day, Sister M. Antoinette, St. Mary's Hospital, Pierre, discussed "Dietetic Experience for Practical Nurses" and Patricia Brennan, VA Hospital, Sioux Falls, spoke on "Use of Nonprofessional Supervisors" at a "Current Problems" round table. At the final session, Dr. E. S. Watson, President, South Dakota Mental Health Association, discussed "The Role of the Dietitian in the Mental Health Program." A slide film, "Taking Care of Diabetes," was shown.

The South Dakota Dietetic Association is cooperating with the State Department of Health in sponsoring a series of approximately fifteen training schools for hospital food service personnel.

Utah Dietetic Association. "The Treatment of the Polio Patient," a symposium, was featured at the December meeting of the Utah Dietetic Association in Salt Lake City. Representatives of the medical, nursing, physical therapy, and dietary departments of the Dr. W. H. Groves Latter-Day Saints Hospital, where the meeting was held, participated. Members were conducted through the polio ward to observe the actual training program for patients.

Salt Lake City was also the scene of the January meeting, this time at the Holy Cross Hospital School of Nursing. In cooperation with the Dairy Council of Utah, the film "Weight Reduction through Diet" was given its first showing in the state. A pamphlet enlarging upon the text of the film was distributed. It was followed by a talk on "The Medical Aspects of Weight Reduction" by Dr. Glen B. Leymaster, Head, Department of Health and Preventive Medicine, University of Utah Medical School. Dr. Norman Anderson, Department of Psychiatry, University of Utah Medical School, discussed "The Psychological Aspects of Weight Reduction."

Association Activities

A.D.A. Representatives at State Meetings. National representatives have been scheduled for the following state dietetic association spring meetings:

March 25–27—Ruth M. Yakel, Kentucky Dietetic Association, Louisville
April 11–12—Beulah Hunzicker, Texas Dietetic Association, Fort Worth
April 16–18—Clara Zempel, Pennsylvania Dietetic Association, Scranton
April 18–19—Margaret A. Ohlson, Georgia Dietetic Association, Savannah
April 23–24—Beulah Hunzicker, Indiana Dietetic Association, Indianapolis
April 24–25—Cora Kusner, New York State Dietetic Association, Rochester
April 25–26—Beulah Hunzicker, Ohio Dietetic Association, Akron

Congress on Industrial Health. The Association was invited to assist at the A.M.A. exhibit, "You Can Reduce," 12th Annual Congress on Industrial Health. It was sponsored by the Council on Industrial Health of the American Medical Association and held in Pittsburgh, January 17 to 19. Florence G. Fralin, President, Pittsburgh Dietetic Associa-

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tion, was in charge with the assistance of seven other A.D.A. members in the Pittsburgh area. This was the first time that A.D.A. members have been asked to be present to answer questions pertinent to nutrition at an A.M.A. exhibit. The Council on Industrial Health expressed enthusiasm about future cooperative efforts.

Chicago Dental Society. The Annual Meeting of the Chicago Dental Society was held February 3 to 6. The Association cooperated by exhibiting "Food for the Young Child." Attractive yellow leaflets titled "Youth Special Flyer" (as well as other material), were distributed. This new leaflet, planned for distribution by dentists to "young fry," includes a sample day's menu for the young child and a list of the foods to be eaten daily. It is available to dentists and others, from the A.D.A. office:

Single copy	$ .05
In lots of 25	.60
In lots of 100	2.00

Genevieve Anthony of the Chicago Dietetic Association was in charge of the exhibit with local A.D.A. members assisting.

Members in the Spotlight. A public health nutritionist, Helen Ger Olson, Dietary Consultant, Division of Maternal and Child Health, Kansas State Board of Health, Topeka, was featured on the cover of the January issue of *Practical Home Economics*. A column concerning Miss Olson appeared on the editorial page.

In the January, 1952 issue of *International Altrusan*, tribute was paid to Lydia J. Roberts and Lenna Frances Cooper. The Lydia J. Roberts Essay Award was also described.

WMSC. Mable M. MacLachlan, Consultant to the Women's Medical Specialist Corps of the U.S. Army, attended a meeting of the consultants of the three divisions of the WMSC—dietitians, occupational therapists, and physical therapists—in Washington, D. C., January 30 and 31. Personnel procurement was the main topic discussed. The WMSC urgently needs 200 dietitians by June to fill its quota. Any A.D.A. member interested may write for information to the Office of the Surgeon General, Washington, D. C., or the A.D.A. office.

A.D.A. Was Represented. Ruth Spencer represented A.D.A. at the *American Council on Education* meeting in Washington, D. C., January 25 and 26.

Vera W. Walker represented A.D.A. at the second annual *Southern Conference on Gerontology* held at the University of Florida, Gainesville, January 28 and 29. "Living in the Later Years" was the theme of the meeting.

Committee Meetings. The A.D.A. Library Committee met two evenings in January to review the cataloguing being done and to make future plans. The committee consists of A. Elizabeth Whitney, Dorothy Bates, Joan C. Schaberg, and Elizabeth Tuft, all of Chicago.

The By-Laws Committee of the House of Delegates met at the A.D.A. office on the evening of January 22 to review the past year's work. A letter was written to the state dietetic associations who have not yet submitted revised final state constitutions. Charlotte Ludwig, Jean M. Riggs, Martha McBride, Elizabeth H. Tuft, and Beulah Hunzicker constitute the committee.

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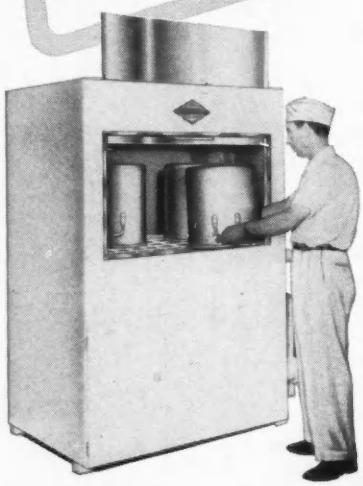

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OCCUPIES FLOOR SPACE OF ONLY 3'4" x 4'8"

NOW *your* kitchen can *machine-wash* and rinse all pots, roasting pans, steam table pans, kettles and utensils —even 80-quart mixing bowls!

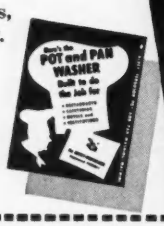
No more slow, old-fashoned soaking and scraping! This new A-F Model MK "Panhandler"—with automatic wash timer—uses the powerful A-F Super-Spray pressure system which removes even the most obstinate residues from pots and pans—in one washing!

Low Initial Cost . . .
Low Maintenance Cost

And the A-F Model "MK" is so compact that it can be easily placed in any convenient corner or alcove!

Can be furnished for gas, steam or electric heating.

Write today for New Free Folder on Model MK Panhandler



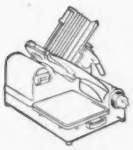
MACHINE WASHES ALL THESE QUICKLY - THOROUGHLY - ECONOMICALLY!

THE ALVEY-FERGUSON COMPANY
240 Disney St. Established 1901 Cincinnati 9, Ohio
Also Engineers and Manufacturers of A-F Pan and Rack Washers for Bakeries

News of Advertisers

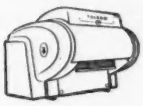
The *Aluminum Cooking Utensil Company* has recently released the first two of a series of cookbooks—the series being titled "Mealtime Magic." All books in the series are hardbound with washable paper covers printed in four colors. The first in the series, "Meat and Poultry Cookery," presents more than 200 recipes which have been tested under the direction of Margaret Mitchell, the company's Director of Home Economics. Information on oven temperatures, can and jar sizes of canned food, and a table of equivalent measures are given on the inside front cover, while suggestions for using aluminum foil are presented on the inside back cover. Introductory chapters deal with: meat grading and purchasing, including photographs of cuts of meat; methods of cooking meat; ten pages of menu suggestions; and a two-page chart

TODAY'S RECIPE TO CONTROL COSTS
TOLEDO.. *All the way!*

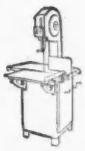


SLICERS. New Toledo Slicer with Quick-Weigh Estimator—saves time, saves steps. Illuminated platter . . . greatest ease of operation and cleaning.

CHOPPERS. Time-saving speed . . . produces chopped meat which looks better, tastes better. Clean modern beauty. Three sizes.



STEAK MACHINES. Make delicious, tender steaks. Easy to clean and keep clean. Cutting group safely removable as a unit.



SAWS. Better cutting faster! Big capacity . . . illuminated meat table . . . new speed and ease in cleaning.

"DOUBLE ACTION" PEELER for potatoes and vegetables . . . cleaner, faster with minimum of waste. Efficient sharp abrasive surfaces on *both* cylinder wall and disc. Choice of capacities.

DISHWASHERS . . . fast, efficient! *Door-Type,* with 3-Way Door, opens front and both sides . . . Zip-Lok makes it easy to remove spray tubes for cleaning, without tools. *Conveyor-Type* in full range of sizes and capacities.

New AUTOMATIC CONVEYOR Model C2A-1 DISHWASHER

Now—another outstanding new Toledo to *save kitchen labor* and *reduce costs* . . . Model C2A-1 Automatic Conveyor Dishwasher! Efficient single tank design with separate rinse compartment. Deflector holds clear water going into wash to desired amount. Tank is shallow, single level, for easy cleaning. Capacity 3750 dishes per hour. Two speed conveyor, with "dwell". Zip-Lok makes removal and replacement of spray tubes easy, without tools. Self-draining pump.

RECEIVING SCALES. Toledo Receiving Scales ideal for weighing-in all produce and meats.

PORTION SCALES. Toledo Speedweigh over - and - under scales provide speedy, accurate weighing of portions.

INGREDIENT SCALES. Precise weighing with Toledos helps you control quality of mixes.

TOLEDO SCALE COMPANY, TOLEDO 1, OHIO

Without obligation send me literature on "Toledo All The Way" in modern restaurant kitchens.

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on pressure cooking of meats and fowl. Recipes are presented according to the type of meat or poultry. The second book in the series is "Desserts." The pattern of the book is similar, with a colorful, washable cover and tables of substitutions and equivalents needed in making desserts on the inside cover. In the introductory section Miss Mitchell presents seven secrets of successful cake baking, as well as solutions to such cake problems as "when cake does not rise"; "when cake falls"; "when cake is cracked"; and "when crust is tough." The more-than-200 recipes run the gamut from cakes to puddings and sauces. Both books, as well as the rest of the series when it appears, are being marketed through super-markets and housewares departments of department and hardware stores. The retail price is 79 cents a copy, with a quantity reduction to home economists in lots of twelve or more.

Abbott Laboratories, makers of Sucaryl, have now lifted their recommended limitation on daily intake of the sweetener, as a result of extensive research showing that no deleterious effects occur from its unrestricted use. The limitation, self-imposed by Abbott at the time the product was introduced to insure complete safety of its use, was first set at 1 gm. per day, or 1½ tsp. of the liquid form. Excessively large amounts of Sucaryl, however, may produce a laxative effect in some individuals, in which case intake should be reduced.

Hotpoint, Inc., has announced several new units to complete its counter kitchen suitable for any average lunch counter, coffee shop, drive-in, or drug-store. Included in the new units are: (a) a heavy-duty griddle, with cooking temperatures from 200° to 500° F., which requires only 37 in. of counter space; twin automatic controls permit operating either half of the griddle separately; (b) a new type of roll warmer; (c) a one-pan, all-purpose oven which has a new feature called an "Air-Cushion" permitting baking and roasting on the same surface. This brings the custom-matched counter cooking units available from Hotpoint to eight. They are uniform in size and can be readily banked together so that the over-all appearance is that of one custom-built unit. The eight units together offer unlimited cooking possibilities from the preparation of potato chips to roasting a 30-lb. ham.

General Foods' Certo Division has completed a full-color film, "Treasures for the Making," designed to stimulate year-round preparation of jams and jellies in the home. The 20-min. motion picture is prepared primarily for showing to women's clubs and home economics classes and includes sequences on the preparation of jams and jellies, using fresh, bottled, dried, or frozen fruits and juices. General Foods also recently offered a jelly recipe folder calling for frozen or bottled juices as ingredients and has issued another film titled "Jam Session." This is a slide film and deals with the techniques of making jams and jellies by the short-boil method. Both films are available on a free, loan basis to women's groups and are also available for use at grocers' conventions. Requests should be sent to General Foods, Box FX, New York 17.

The Institution Department of *General Foods* is offering a useful 1952 calendar to operators of public feeding establishments. The calendar indicates all important holidays, as well as meatless days, the lower half of the calendar featuring recipes for six popular, low-cost meatless dishes to help operators plan menus.

Aatell and Jones have planned a diversified program with their 1952 Doily-of-the-Month series. The March place mat features fish; April, silverware; May, restaurants; June, dairies; July, monosodium glutamate; and August, cherry pie time. September, appropriately enough, features the school lunch subsidy; October, sweetest month; November, raisin harvest; and December's doily will be tied in with the Christmas theme, of course.

A full-color, accordion-type folder on Blodgett gas-fired sectional ovens is offered by the *G. S. Blodgett Co.* The booklet gives full data on the complete Blodgett oven line and many useful facts on how the units can be used. Information on the advantages of on-premise baking, reducing meat shrinkage, using prepared baking mixes, and other important subjects is also included.

A new and simplified method of making French onion soup is being promoted jointly by *Wilson & Co.* and *H. J. Heinz Company* as a saver of both food and labor costs. Using the new method, dehydrated Heinz Magic Onions are browned in butter or margarine, and soup broth made by dissolving Wilson's B-V meat paste in hot water is added. The soup is ready for serving, after the addition of croutons, grated cheese, or other garnish. Cost estimates as released are: 1¾ cents per cup, 3½ cents per soup bowl, or 57 cents per gallon.

Foley-Irish Corporation has introduced a new detergent especially formulated for silverware washer and driers, brush glass-washers, and hand dishwashing operations. It is so concentrated that a heaping teaspoonful is recommended rather than the usual tablespoonful of powder previously used in silverwashing and drying machines. The efficiency of the new concentrate is due to a high percentage of expensive wetting agent, plus other high-efficiency chemicals. The contration of wetting agent, it is pointed out, is too high for use in spray-type dishwashing machines.

The *Toledo Scale Company* has announced the new model C2A-1, bringing into its line of dishwashers a single-tank dishwashing machine with two-compartment construction. It combines the advantages of automatic conveyor operation with the compactness and economy of a single-tank machine. The tank has a 31-gal. capacity, and average washing capacity is 3750 dishes an hour. This new model is equipped with: wash and rinse compartments; a two-speed conveyor control providing for normal or slow speeds; a neutral or "dwell" position, making it possible to hold racks of dishes in the power wash for extra time when necessary; and an adjustable control for replenishing wash water.